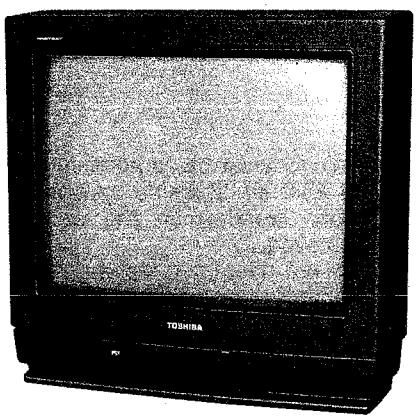
SERVICE DATA
FILE NO. 050-273
PAL B/G-SYSTEM

TOSHIBA

COLOUR TELEVISION

175R9T



SPECIFICATIONS

Input Power Rating :	76 WH, AC 220 volts, 50 Hz
Aerial Input Impedance :	75 ohm unbalanced type for VHF and UHF
Receiving Channels :	PAL B/G Standard : VHF ..... channels 2 to 4, 5 to 12 and S1 to S20 UHF ..... channels 21 to 69
Intermediate Frequencies :	Picture I-F carrier frequency ..... 38.9 MHz Sound I-F carrier frequency ..... 33.4 MHz
Picture Tube :	17 inches, A41EAM01X01, 410 mm (measured on diagonal of viewable picture area), 90° deflection
Sound Output :	3 watts (at 10% harmonic distortion)
Speakers :	71 × 41 mm, Oval
Aux. Terminals :	Headphone Jack, 21 pin socket
Dimensions :	Height ..... 415 mm Width ..... 437 mm Depth ..... 404 mm
Weight :	14.5 kg

Specifications are subject to change without notice.

Printed in Japan Dec. 1989 (So)

SAFETY INSTRUCTIONS

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" INSTRUCTIONS BELOW.

X-RAY RADIATION PRECAUTION

1. The E.H.T. must be checked every time the receiver is serviced to ensure that the C.R.T. does not emit X-ray radiation as result of excessive E.H.T. voltage. The nominal E.H.T. for this receiver is 26.5 kV at zero beam current (minimum brightness) operating at 220V a.c. The maximum E.H.T. voltage permissible in any operating circumstances must not exceed 27.5 kV. When checking the E.H.T., use the 'High Voltage Check' procedure in this manual using an accurate E.H.T. voltmeter.
2. The only source of X-RAY radiation in this receiver is the C.R.T. To prevent X-ray radiation, the replacement C.R.T. must be identical to the original fitted as specified in the Parts List.
3. Some components used in this receiver have safety related characteristics preventing the C.R.T. from emitting X-ray radiation.
   For continued safety, replacement component should only be made after referring the Product Safety Notice below.

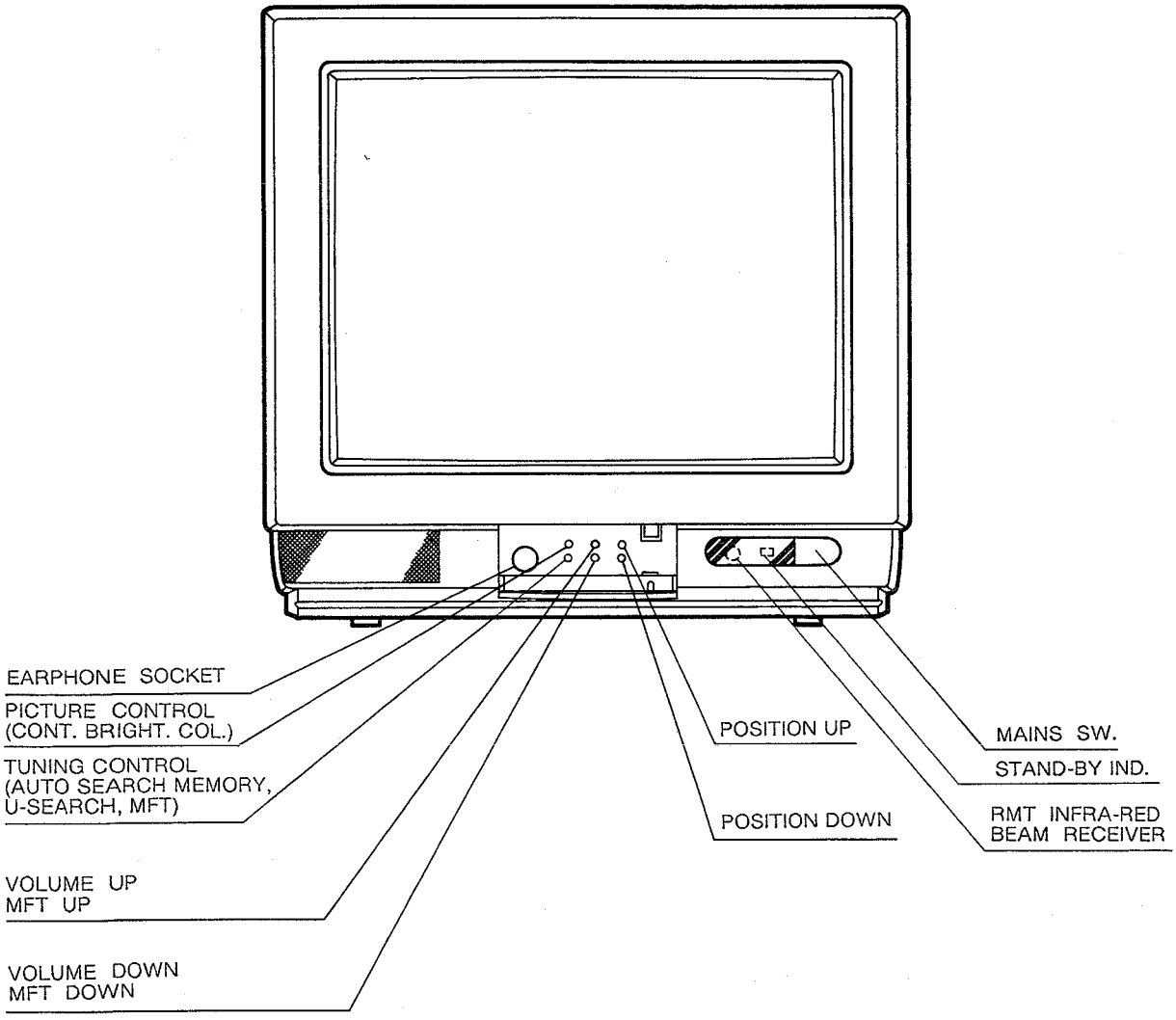
SAFETY PRECAUTION

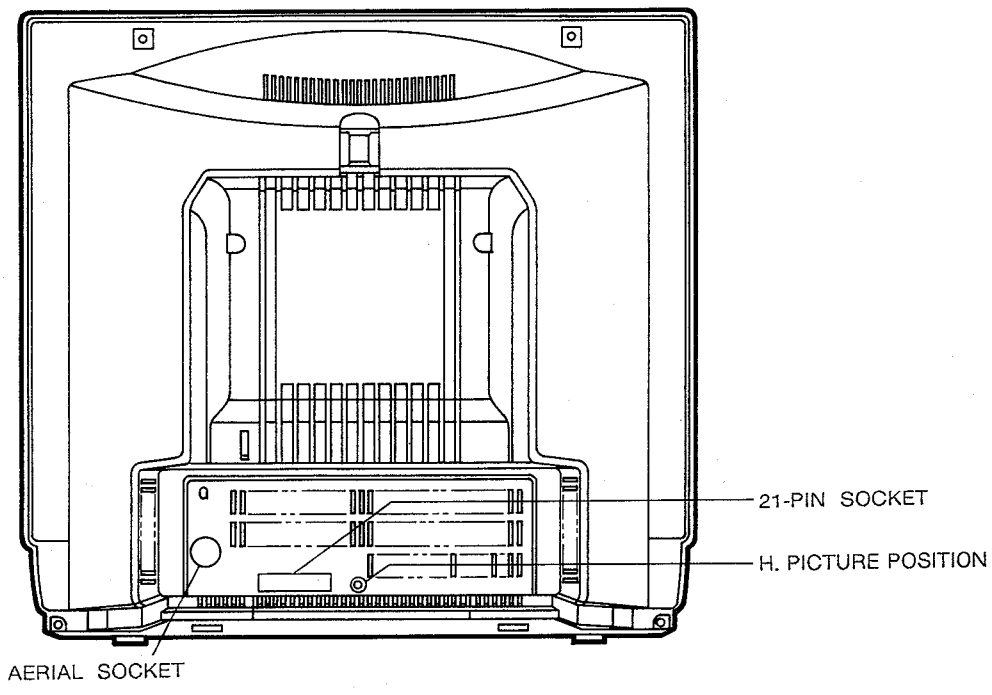
1. This receiver has a nominal working E.H.T. voltage of 25.0 kV. Extreme caution should be exercised when working on the receiver with the back removed.
   Do not attempt to service this receiver if you are not conversant with the precautions and procedures for working on high voltage equipment.
   When handling or working on the C.R.T., always discharge the anode to the receiver chassis before removing the anode cap
   The C.R.T., if broken, will violently expel glass fragments. Use shatter proof goggles and take extreme care while handling.
   Do not hold the C.R.T. by the neck as this is a very dangerous practice.
2. It is essential that to maintain the safety of the customer all cable forms be replaced exactly as supplied from factory.
3. A small part of the chassis used in this receiver is, when operating, at approximately half mains potential at all times. It is therefore essential in the interest of safety that when serving or connecting any test equipment the receiver should be supplied via a suitable isolating transformer of adequate rating.
4. Replace blown fuses within the receiver with the fuse specified in the parts list.
5. When replacing wires or components to terminals or tags, wind the leads around the terminal before soldering. When replacing safety components identified by the international hazard symbols on the circuit diagram and parts list, it must be a Toshiba approved type and must be mounted as the original.
6. Keep wires away from high temperature components.

PRODUCT SAFETY NOTICE

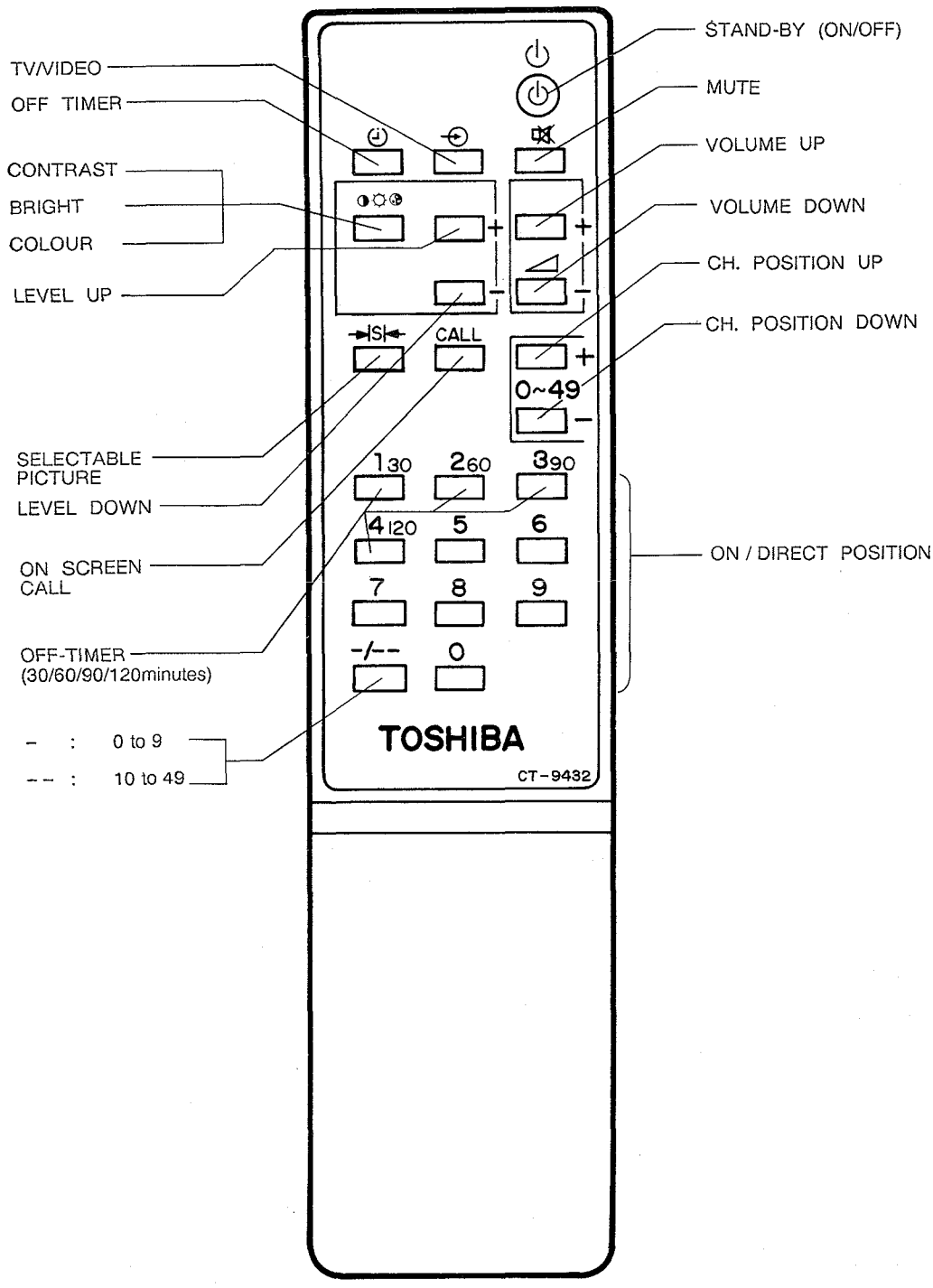
Many electrical and mechanical components in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-ray radiation protection afforded by them cannot necessarily be obtained by using replacements rated at higher voltages or wattage, etc.Components which have these special safety characteristics in this manual and its supplements are identified by the international hazard symbols on the schematic diagram and parts list. Before replacing any of these components read the parts list in this manual carefully. Substitute replacement components which do not have the same safety characteristics as specified in the parts list may create X-ray radiation.

FRONT CONTROLS AND REAR VIEWS





REMOTE HAND HELD UNIT



WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

INSTALLATION AND SERVICE ADJUSTMENTS

GENERAL INFORMATIONS

All adjustments are thoroughly checked and corrected when the receiver leaves the factory. Therefore the receiver should operate normally and produce proper colour and B/W pictures upon installation. However, several minor adjustments may be required depending on the particular location in which the receiver is operated.

This receiver is shipped completely in cardboard carton. Carefully draw out the receiver from the carton and remove all packing materials. Plug the power cord into a convenient 220 volts 50 Hz AC two pin power outlet. Turn the receiver ON. Check and adjust all the customer controls such as BRIGHTNESS, CONTRAST and COLOUR Controls to obtain natural colour or B/W picture.

AUTOMATIC DEGAUSSING

A degaussing coil is mounted around the picture tube so that external degaussing after moving the receiver is normally unnecessary, providing the receiver is properly degaussed upon installation. The degaussing coil operates for about 1 second after the power to the receiver is switched ON. If the set is moved or faced in a different direction, the power switch must be switched off at least one hour in order that the automatic degaussing circuit operates properly.

Should the chassis or parts of the cabinet become magnetized to cause poor colour purity, use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube, the sides and front of the receiver and slowly withdraw the coil to a distance of about 2 m before disconnecting it from AC source. If colour shading still persists, perform the COLOUR PURITY ADJUSTMENT and CONVERGENCE ADJUSTMENTS procedures.

HIGH VOLTAGE CHECK

CAUTION: There is no HIGH VOLTAGE ADJUSTMENT on this chassis.

1. Connect an accurate high voltage meter to the second anode of the picture tube.
2. Turn on the receiver. Set the BRIGHTNESS and CONTRAST Controls to minimum (zero beam current).
3. High voltage will be measured below 27.5 kV.
4. Rotate the BRIGHTNESS Control to both extremes to be sure the high voltage does not exceed the limit of 27.5 kV under any conditions.

HEIGHT ADJUSTMENT

1. Receive the WG PHILIPS pattern, and set the contrast and colour to minimum, and the brightness to centre.
2. Change the VERT POSITION SW (S301) so the round shape in the pattern is located in the centre of screen.
3. HEIGHT Control (R351) on MAIN Board changes the size of the picture or pattern, having an equal effect on the top and bottom. Make final adjustment to overscan the mask 2 cm at top and bottom.

HORIZONTAL CENTRE ADJUSTMENT

1. Receive the WG PHILIPS pattern.
2. Set the contrast and colour to minimum, and the bringhtness to centre.
3. Adjust H. CENTRE USER Control (R452) to the click (centre) position.
4. Adjust H. CENTRE SUB Control (R451) so the pattern centre can be located at the screen centre.

FOCUS ADJUSTMENT

Adjust FOCUS Control on FLYBACK TRANS.(T461) for well defined scanning lines in the centre area on the screen.

RF AGC ADJUSTMENT

1. Tune the set in the strongest station in your area.
2. turn RF AGC Control (R151) on IF Board to fully counterclockwise position.
3. Adjust RF AGC Control clockwise until noise (snow) disappears on the screen.

PAL MATRIX ADJUSTMENT

1. Tune in the colour programme of the Philips pattern.
2. Set the COLOUR Control to obtain the proper colour.
3. If the PAL MATRIX adjustment is incorrect, the Venetian Blind would appear in the colour bars area. This case needs the adjustment.
4. At the first, adjust DL PHASE ADJ. Coil (L551) to minimize the Venetian Blind.
5. Next adjust 1H-DL ADJ. VR (R551) to minimize the Blind.
6. If the Venetian Blind still remains, adjust 1H-DL PHASE ADJ. Coil (L551) to minimize the Blind again.
7. Repeat the item 5 and 6 procedures, adjust the R551 and L551 until the Blind does not appear.

CRT GREY SCALE ADJUSTMENT

1. Tune in an active channel.
2. Turn the SCREEN Control (on T461) fuly counter-clockwise.
3. By rotating the RED, GREEN and BLUE CUT OFF Controls (R557, R558, R559) counterclockwise to the minimum.
4. Set the GREEN and BLUE DRIVE Controls (R252, R253) to the mid position.
5. Set the SERVICE SW. (S202) in the H. line posiiton.
6. Short temporarily RASTER Terminal (P590) on the CRT DRIVE Board.
7. Set the CONTRAST, COLOUR Controls to minimum and BRIGHTNESS Control to centre position.
8. Rotate the SCREEN Control gradually clockwise until the first line appears slightly on the screen. Set the SCREEN Control to this position.
9. Open the RASTER Terminal (P590) on the CRT DRIVE Board.
10. Adjust the CUT OFF Controls to obtain the slightly lighted horizontal lines in the same levels of three colours (RED, GREEN and BLUE).
    The lines may look like white if the CUT OFF Controls are adjusted properly.
11. Return the SERVICE SW. (S202) in the Receiving position.
12. Set the BRIGHTNESS Control to the maximum and COLOUR Control to the minimum.
13. Adjust the BLUE and GREEN DRIVE Controls (R252/R253) to obtain proper white-balanced picture in high light areas.
14. Set the BRIGHTNESS and CONTRAST Controls to obtain dark grey raster. Then check the white balance in low brightness. If the white balance is not proper, retouch the CUT OFF Controls and DRIVE Controls to obtain a good white balance in both low and high light areas.

SUB-BRIGHTNESS ADJUSTMENT

1. Tune in a colour programme.
2. Set the CONTRAST Control to the maximum and the BRIGHTNESS Control to the centre.
3. Set the COLOUR Control to the minimum.
4. Set the SUB-BRIGHT. Control (R255) to the centre and leave the receiver for five minutes in this state.
5. Watching the picture well, adjust the SUB-BRIGHT. Control in the position where the picture does not show evidence of blooming in high bright area and not appear too dark in low bright portion.
6. Check the proper picture variation by rotating the CONTRAST and BRIGHTNESS Controls to both extremes.
7. If the picture does not appear dark with the CONTRAST and BRIGHTNESS Controls turned to the minimum, or not appear bright with the controls turned to the maximum, adjust the SUB-BRIGHT. Control again for the acceptable picture.

PICTURE I-F TRAP ALIGNMENT

GENERAL ..... Refer to figure 4 for the equipment connection.
PRELIMINARY STEPS ..... 1. Turn off the power switch of TV set.
2. Supply +12 volts to the pin 1 of P101 on the IF Board.
SWEEP/MARKER GENERATOR..... Connect to the pin 2 of P101 as shown in figure 1 on the IF Board.
OSCILLOSCOPE..... Connect through the detector (See figure 3.) to the emitter of Q102.

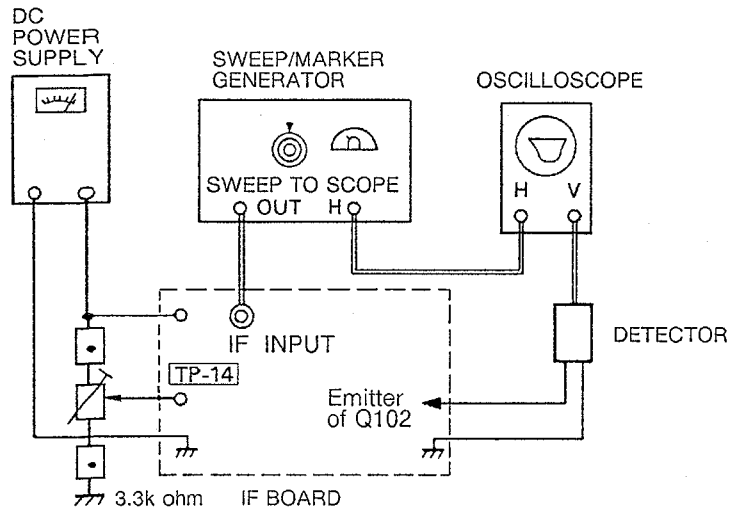


Figure 1.

STEP	SWEEP/MARKER GENERATOR	ADJUST	PROCEDURE
TRAP ALIGNMENT Control the sweep output for easy alignment. Set the IF makers for 40.4MHz (P + 1.5MHz) and 32.4MHz (P–6.5MHz).			
Trap coil L162	40.4MHz Marker "ON"	L162	Adjust L162 so the 40.4MHz marker point is placed at bottom of response. (See figure 2.)
Trap coil L163	32.4MHz Marker "ON"	L163	Short the pin 13 of P102 to ground, and adjust L163 so the 32.4MHz marker point is placed at bottom of response. (See figure 2.)

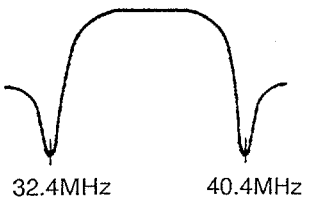


Figure 2. Trap Response

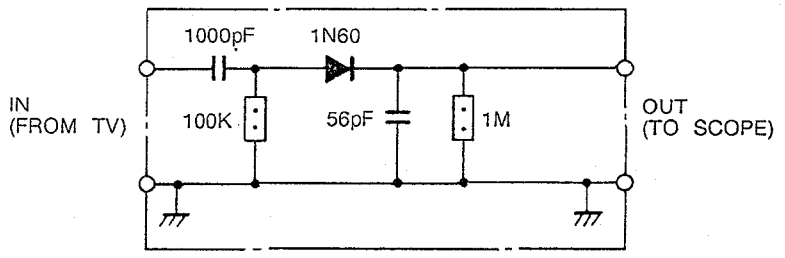


Figure 3. Detector Diagram

PICTURE I-F SWEEP ALIGNMENT

GENERAL..... Refer to figure 4 for test equipment connection.
PRELIMINARY STEPS ..... 1. Supply +12 volts to the pin 1 of P101 on the IF Board.
SWEEP/MARKER GENERATOR..... Connect to the pin 2 of P101 as shown in figure 4 on the IF Board.
Set to 30 ~ 40 MHz sweep with signal level of 75 ~ 85 dBμ.
OSCILLOSCOPE..... Connect to pin 1 IC101 on the IF Board.

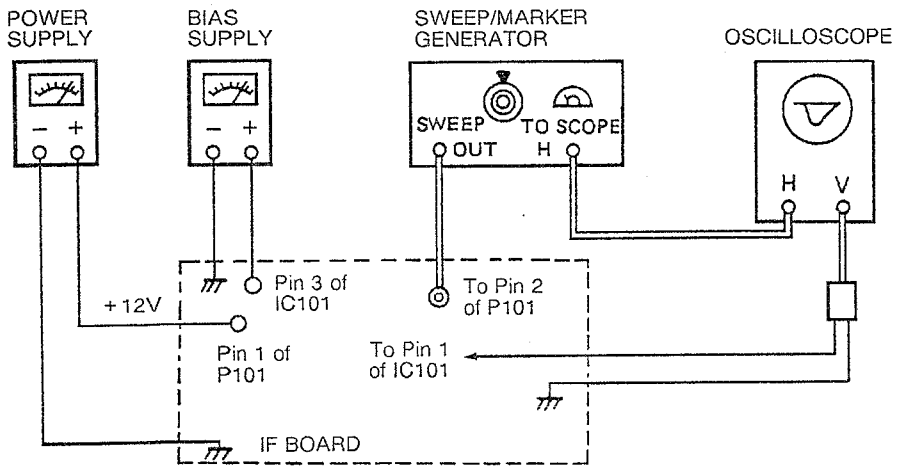


Figure 4. Picture IF Sweep Alignment

STEP	SWEEP/MARGER GENERATOR	ADJUST	REMARKS
1. Detector Coil	38.9 MHz Marker "ON"	L151	• Supply +2 to +3 volts to pin 3 of IC101 to set the output level for 0.4 Vp-p on the scope. • Adjust L151 so that the marker position (38.9 MHz) on the response can lower to minimum. (See figure 5.)
After completing the above steps, disconnect the equipment and re-solder the links on the Main Board, and adjust the AGC Delay control (R151) following DELAYED RF AGC ADJUSTMENTS.			

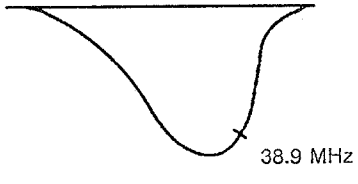


Figure 5. Magnified Response Curve

AFC ALIGNMENT

GENERAL ..... Refer to figure 6 for test equipment connection.

PRELIMINARY STEPS .....
1. Disconnect the solder links on the foil side of the IF Board.
2. Supply +12 volts to the IF Board. (See figure 6.)
3. Short the pin 29 to ground.
4. Turn AGC DELAY Control (R153) on the Main Board fully clockwise.

DVM ..... Connect to the resistor R129 (ⓔ in figure 6) and ground.

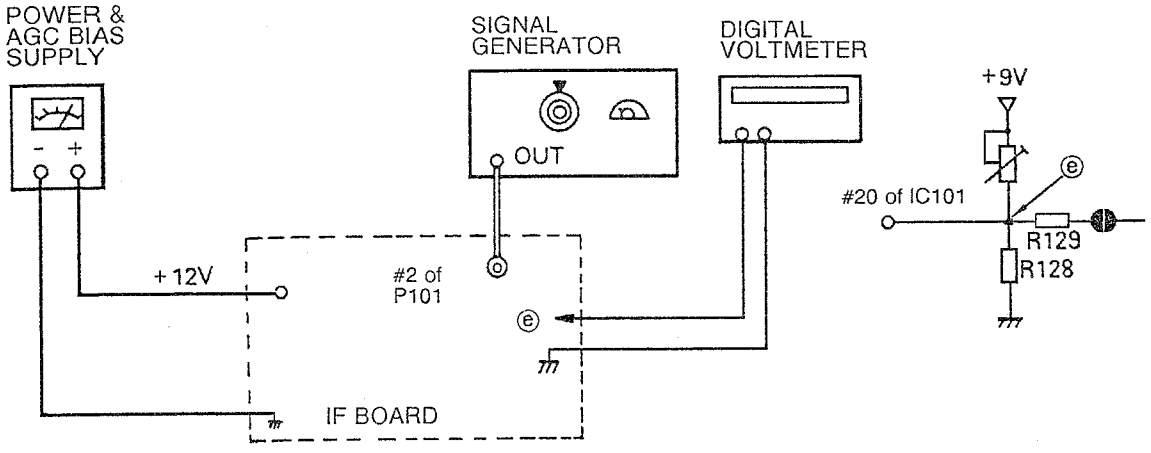


Figure 6. AFC Alignment

STEP	SIGNAL GENERATOR	ADJUST	REMARKS
1. AFC Balance (R153)	NO SIGNAL	R153	• Short the pin 3 of IC101 to ground. • Adjust R153 for 4.5 volts at the point ⓔ in figure 6.

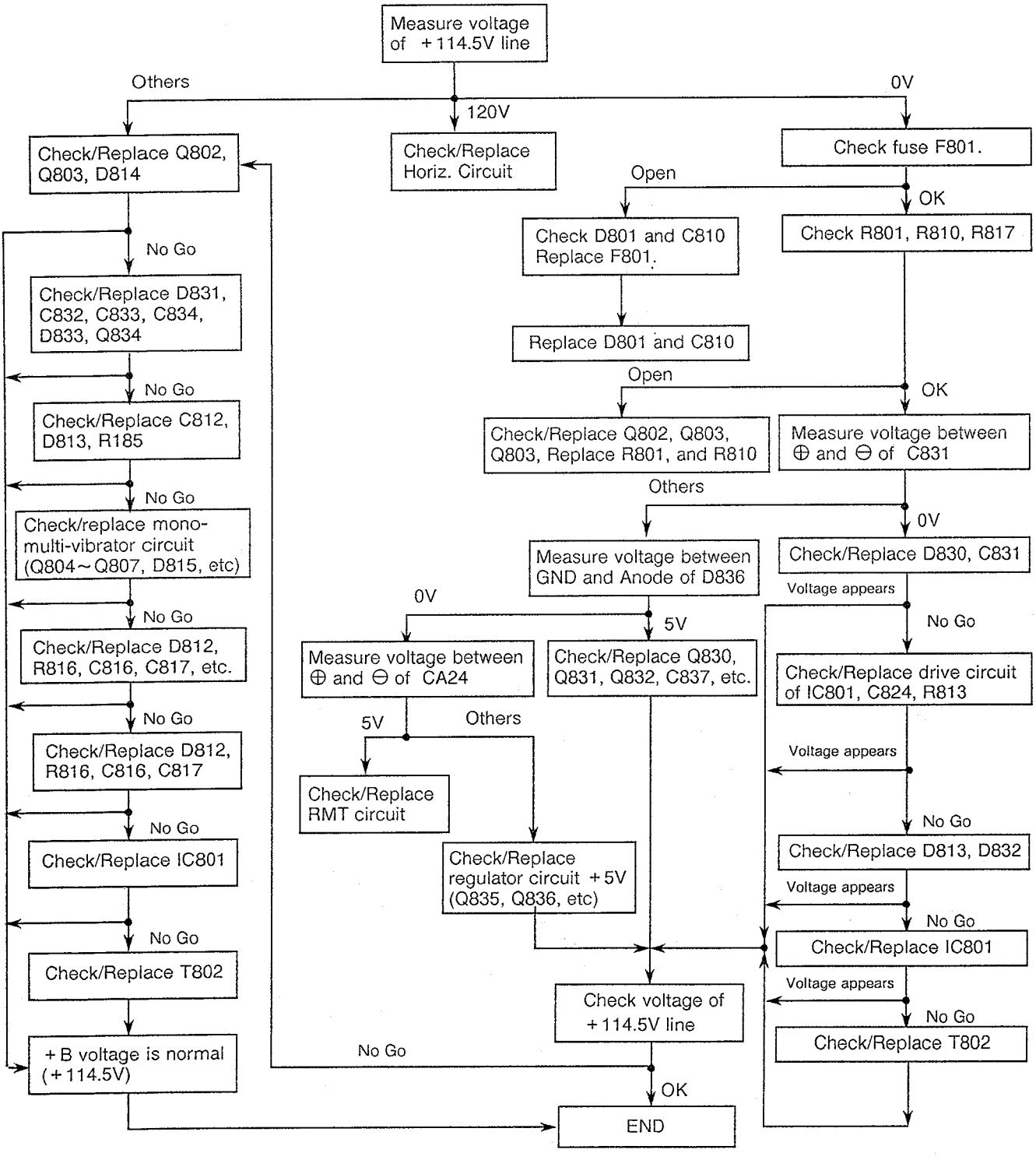
SIF ALIGNMENT

STEP	ADJUSTING PARTS	INPUT TERMINAL	OUTPUT TERMINAL	TEST SIGNAL	PROCEDURE
1	5.5 MHz SIF DET. COIL (LD05)	PIN 2 (QD03)	PIN 9 (QD03)	Input level: 80 to 100 dBμ f = 5.5 MHz fm = 1 kHz Δf = ±15 kHz	1. Connect the signal to pin 2 of QD03 on MPX Board through a capacitor 0.01 uF. 2. Connect voltmeter to pin 9 of QD03. 3. Adjust LD05 for the maximum reading on voltmeter.

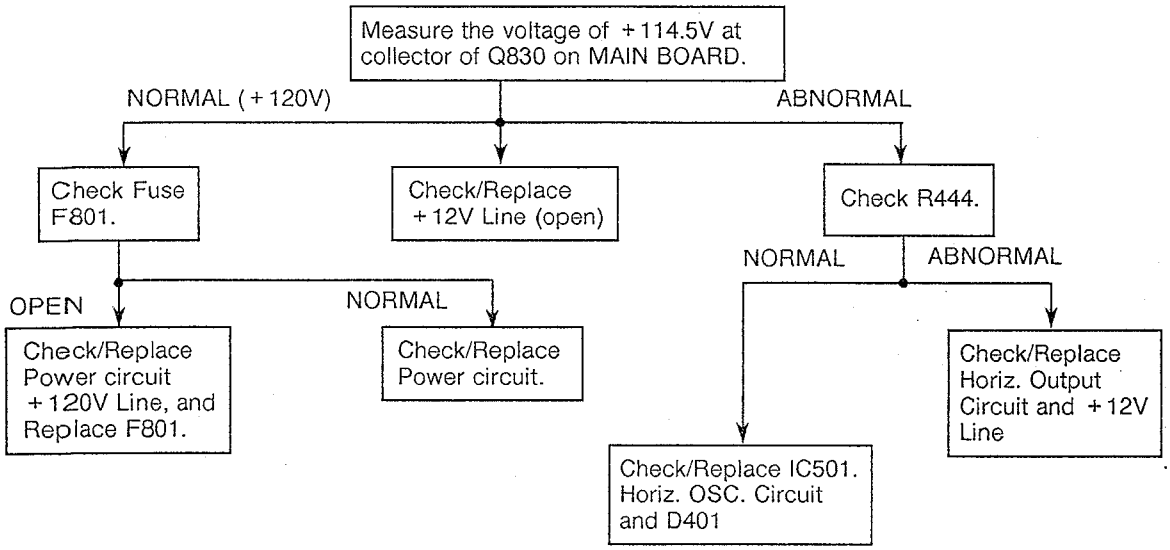
TROUBLESHOOTING CHARTS

The following charts are devoted to troubleshooting which, if followed carefully, will assist you in tracking down a fault to the correct stage.
In order to utilize the charts (fault trees), firstly establish the complaint, i.e. – No Raster, No Sound.
Locate the chart applicable and then progress through the various alternatives until a final block indicates the offending components or stage.

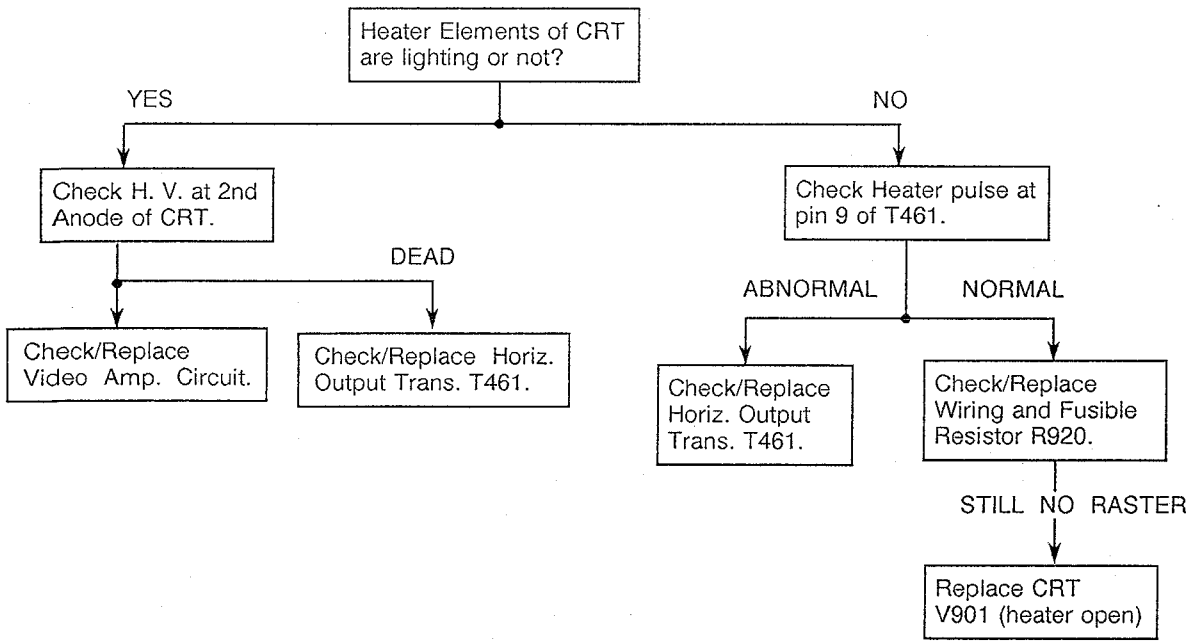
1. NO RASTER AND NO SOUND



2. NO RASTER (NOISE OR WEAK SOUND)

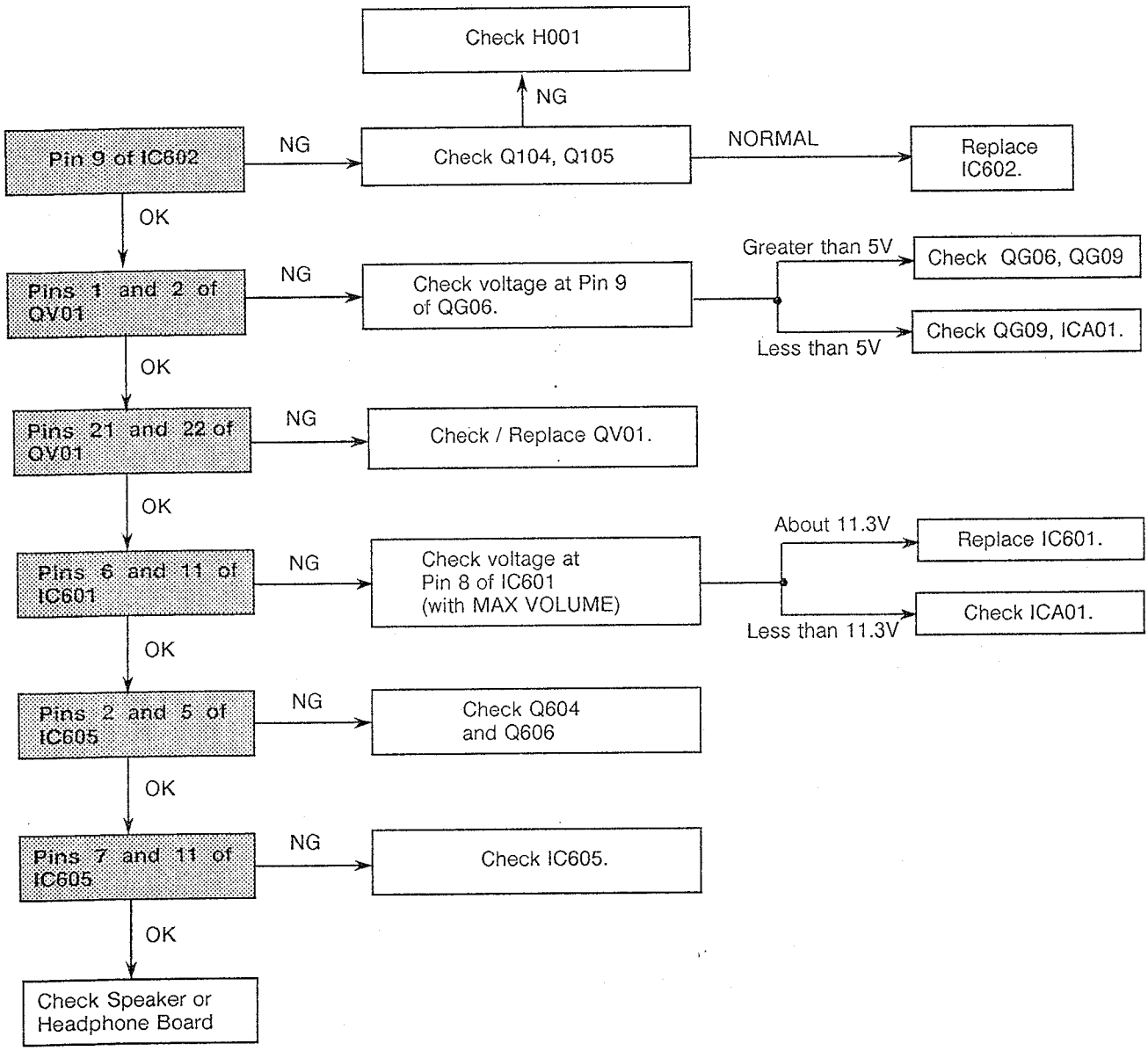


3. NO RASTER (SOUND OK)


Heater Elements of CRT are lighting or not?
YES
NO
Check H. V. at 2nd Anode of CRT.
Check Heater pulse at pin 9 of T461.
DEAD
ABNORMAL
NORMAL
Check/Replace Video Amp. Circuit.
Check/Replace Horiz. Output Trans. T461.
Check/Replace Horiz. Output Trans. T461.
Check/Replace Wiring and Fusible Resistor R920.
STILL NO RASTER
Replace CRT V901 (heater open)

4. NO SOUND

Note: Check the sound signal waveform for shaded area below.



5. NO PICTURE

Check video signal waveform for shaded area below.

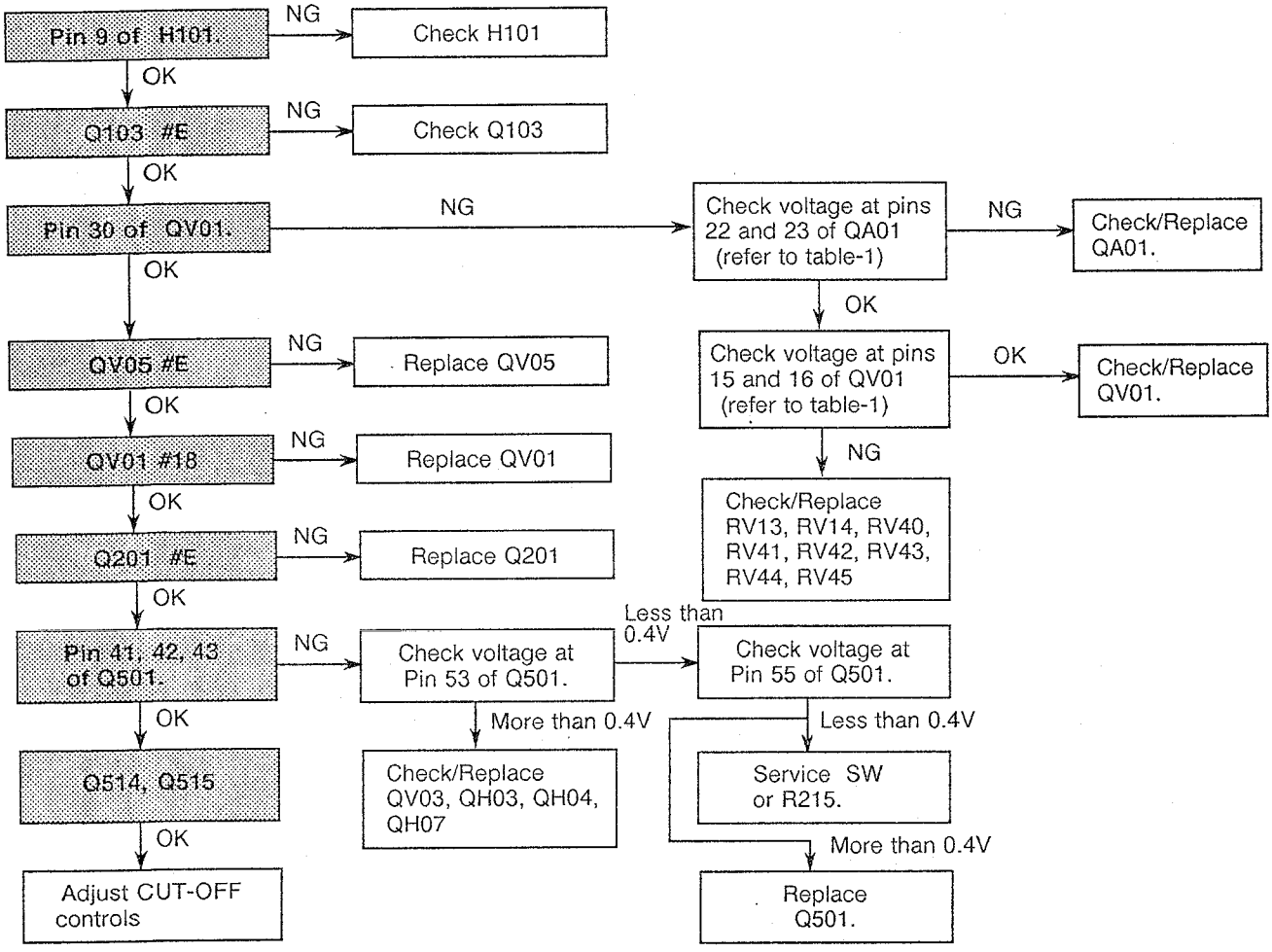


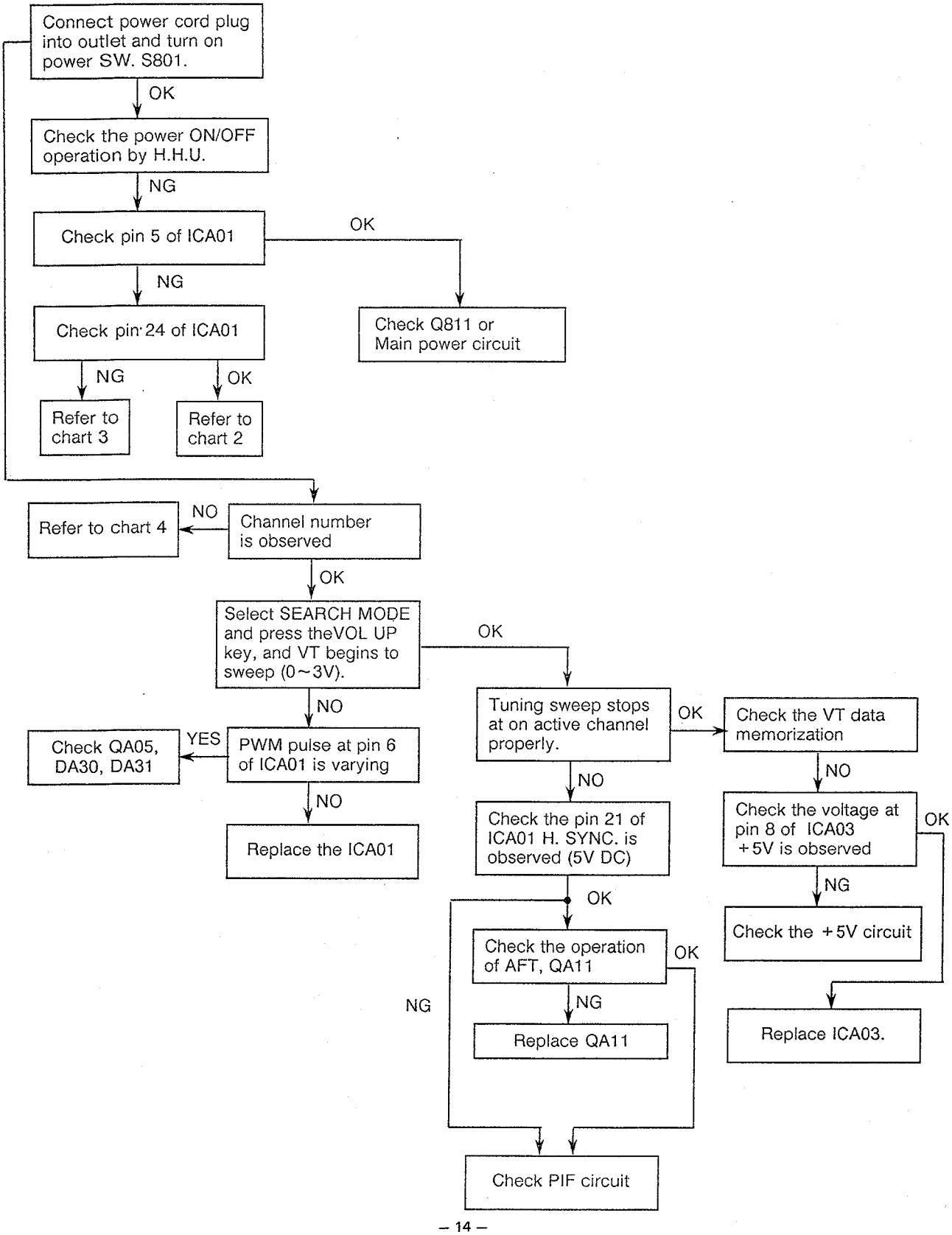
Table-1 (A/V Sw. logic)

MODE	QA01		QV01		Discription of (L) or (H)
	Pin 23	Pin 22	Pin 15	Pin 16	
TV	H	H(L)	H	H(L)	When pin 8 of 21-PIN is High Level
VIDEO	H	L	H	L	

L : Less than 2.5V
H : More than 2.5V

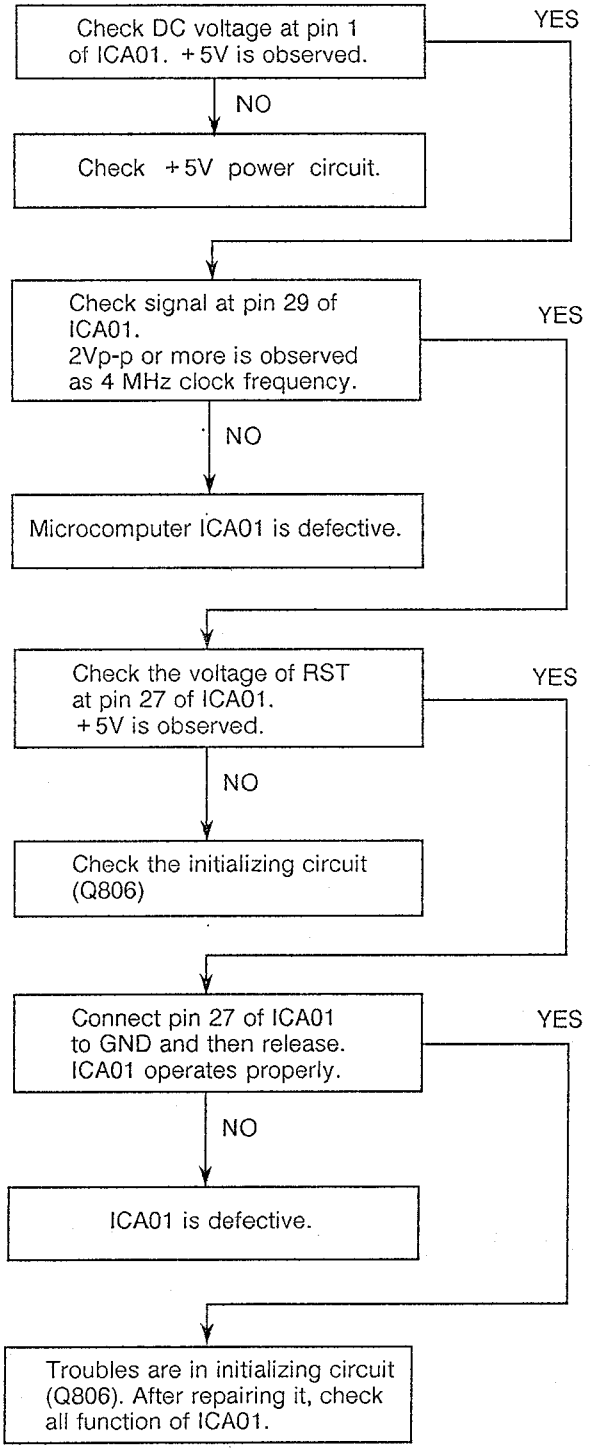
6. CHANNEL SELECTOR TROUBLE

[CHART 1]



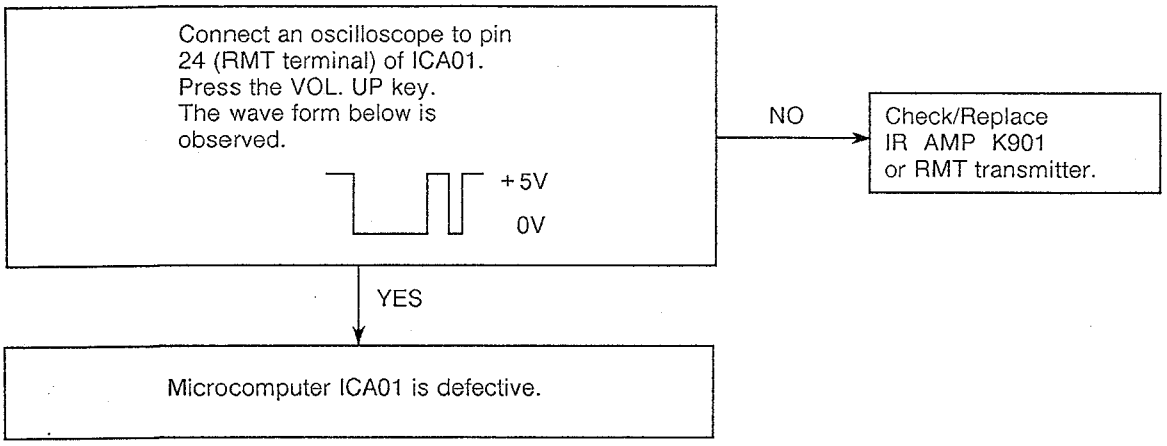
[CHART 2] Microcomputer (ICA01) Operation Check

Note: Before checking Microcomputer, check that control buttons and their connection work properly.

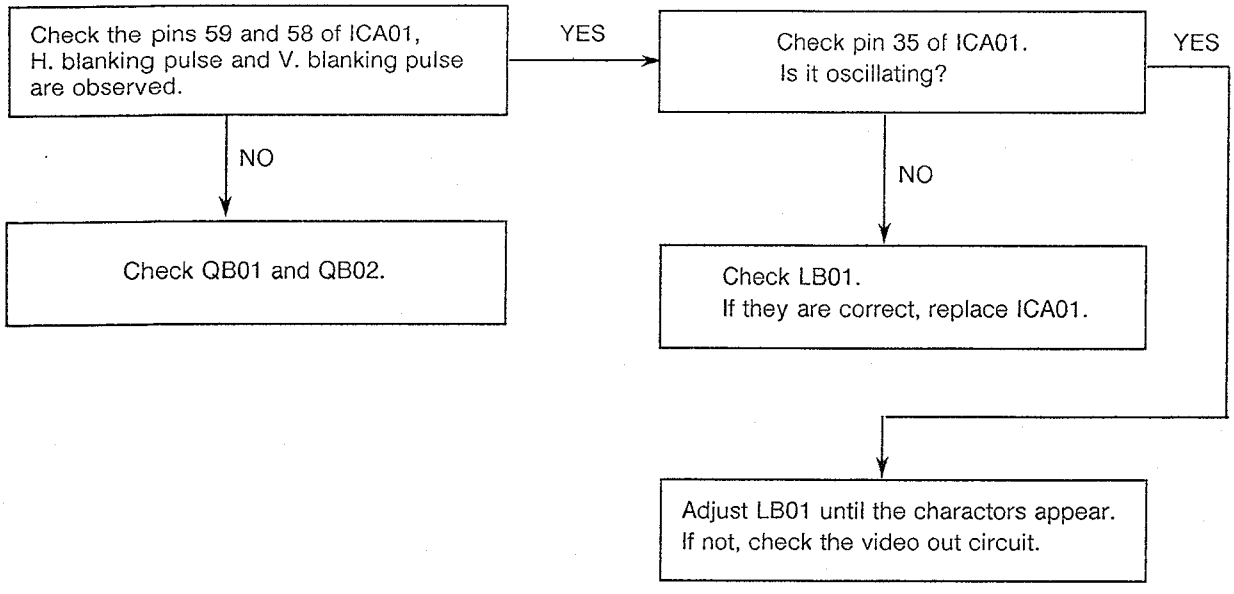

Check DC voltage at pin 1 of ICA01. +5V is observed.
YES
NO
Check +5V power circuit.
Check signal at pin 29 of ICA01. 2Vp-p or more is observed as 4 MHz clock frequency.
YES
NO
Microcomputer ICA01 is defective.
Check the voltage of RST at pin 27 of ICA01. +5V is observed.
YES
NO
Check the initializing circuit (Q806)
Connect pin 27 of ICA01 to GND and then release. ICA01 operates properly.
YES
NO
ICA01 is defective.
Troubles are in initializing circuit (Q806). After repairing it, check all function of ICA01.

[CHART 3] Remote Control Operation Check

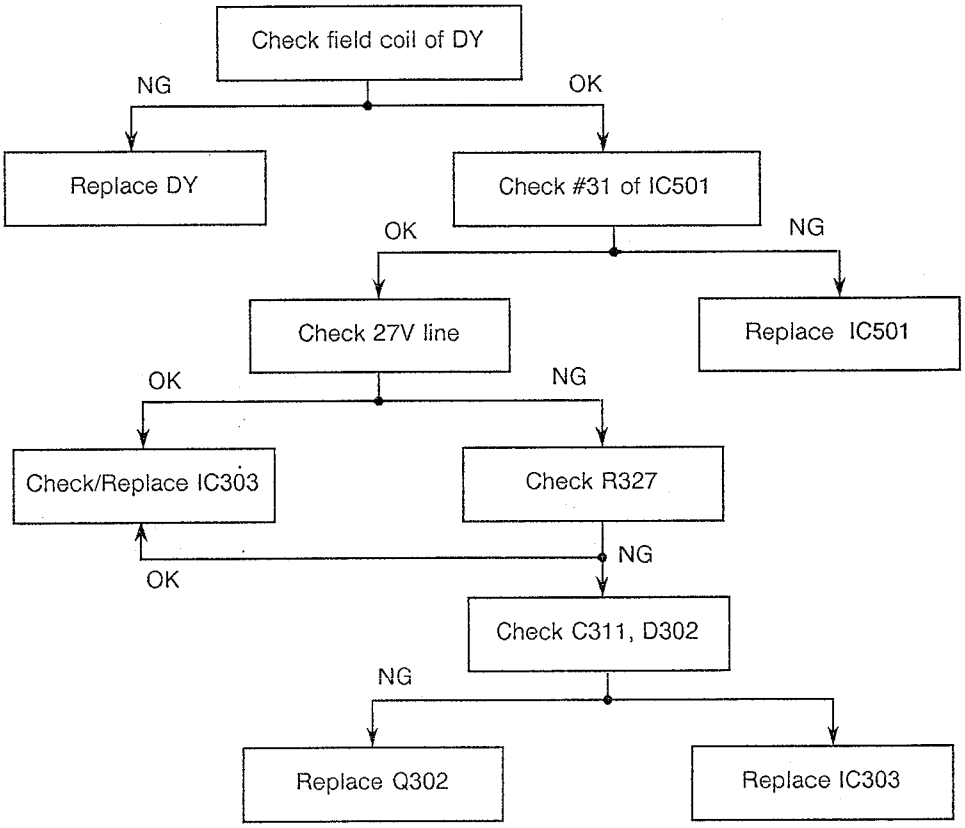
Note : Before checking RMT operation, check that key operation on TV set is proper.


Connect an oscilloscope to pin 24 (RMT terminal) of ICA01.
Press the VOL. UP key.
The wave form below is observed.
+5V
0V
NO
Check/Replace IR AMP K901 or RMT transmitter.
YES
Microcomputer ICA01 is defective.

[CHART 4] On Screen Display Operation Check


Check the pins 59 and 58 of ICA01, H. blanking pulse and V. blanking pulse are observed.
YES
Check pin 35 of ICA01. Is it oscillating?
YES
NO
Check QB01 and QB02.
NO
Check LB01. If they are correct, replace ICA01.
Adjust LB01 until the charactors appear. If not, check the video out circuit.

7. NO VERT. SCAN (ONE HORIZ. LINE RASTER)



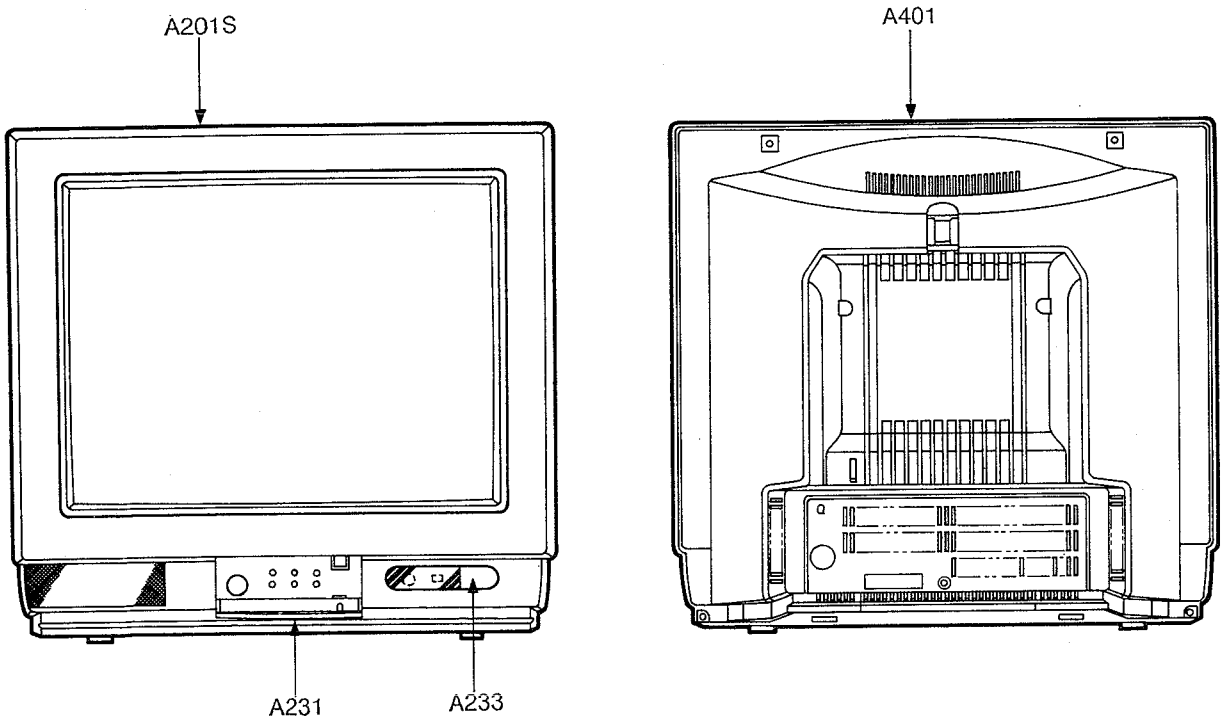
8. OUT OF VERT. SYNC. AND HORIZ. SYNC.

Check/Replace Sync Circuit pin 33 of IC501.

9. OUT OF HORIZ. SYNC.

Check/Replace Horiz. OSC Circuit and Horiz. AFC Circuit connected to Pins 36, 37 and 38 of IC501.
Check/Replace IC501.

CABINET REPLACEMENT PARTS LIST



Location No.	Part No.	Description
A201S	23418049	Front Cover
A231	23423362	Door
A233	23443290	Button, Power
A237	70368125	Push Catch for Door
A401	23423254	Back Cover
A411	23998862	Label, Model Number
A701	23523186	Carton Box
A702	23934323	Packing, Bottom
A703	23934322	Packing, Top
A710	23998863	Label, Carton Box
Y101	23994815	Owner's Manual

CHASSIS REPLACEMENT PARTS LIST

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION" , "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

CAUTION: The international hazard symbols in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2. Do not degrade the safety of the receiver through improper servicing.

NOTICE: The part number must be used when ordering parts, in order to assist in processing, be sure to include the Model number and Description.

ABBREVIATIONS:

Capacitors.....	CD	: Ceramic Disk	PF	: Plastic Film	EL	: Electrolytic
Resistors.....	CF	: Carbon Film	CC	: Carbon Composition	MF	: Metal Film
	OMF	: Oxide Metal Film	VR	: Variable Resistor	FR	: Fusible Resistor

(All CD and PF capacitors are ±5%, 50V and all resistors, ±5%, 1/6W unless otherwise noted.)

Location No.	Part No.	Description
CAPACITORS		
C101	24212102	CD, 1000pF, ±10%
C102	24212102	CD, 1000pF, ±10%
C104	24636220	EL, 22μF, 50V
C105	24232103	CD, 0.01μF, +80%, −20%
C106	24636229	EL, 2.2μF, 50V
C107	24550473	PF, 0.047μF, 63V
C108	24707474	Tantalum, 0.47μF, ±20%, 35V
C109	24232103	CD, 0.01μF, +80%, −20%
C112	24436330	CD, 33pF
C113	24636478	EL, 0.47μF, 50V
C114	24633470	EL, 47μF, 16V
C115	24232103	CD, 0.01μF, +80%, −20%
C116	24232103	CD, 0.01μF, +80%, −20%
C117	24085029	EL, 4.7μF, 16V, Non-Polar
C119	24232103	CD, 0.01μF, +80%, −20%
C120	24212222	CD, 2200pF, ±10%
C121	24085988	EL, 1μF, ±20%, 50V, Non-Polar
C122	24550153	PF, 0.015μF, 63V
C123	24636478	EL, 0.47μF, 50V
C124	24794101	EL, 100μF, 16V
C125	24232103	CD, 0.01μF, +80%, −20%
C126	24212152	CD, 1500pF, ±10%
C161	24212102	CD, 1000pF, ±10%
C162	24212102	CD, 1000pF, ±10%
C163	24212102	CD, 1000pF, ±10%
C164	24232103	CD, 0.01μF, +80%, −20%
C165	24212102	CD, 1000pF, ±10%
C169	24232103	CD, 0.01μF, +80%, −20%
C170	24357201	CD, 200pF
C201	24636100	EL, 10μF, 50V
C202	24795101	EL, 100μF, 25V
C203	24232103	CD, 0.01μF, +80%, −20%
C204	24797220	EL, 22μF, 50V
C205	24636478	EL, 0.47μF, 50V
C207	24633220	EL, 22μF, 16V
C208	24212102	CD, 1000pF, ±10%
C209	24232103	CD, 0.01μF, +80%, −20%
C210	24636100	EL, 10μF, 50V

Location No.	Part No.	Description
C240	24530474	PF, 0.47μF, ±10%, 63V
C301	24636229	EL, 2.2μF, 50V
C302	24212152	CD, 1500pF, ±10%
C303	24617912	EL, 2.2μF, ±10%, 50V
C304	24212102	CD, 1000pF, ±10%
C307	24232103	CD, 0.01μF, +80%, −20%
C311	24796102	EL, 1000μF, 35V
C313	24796101	EL, 100μF, 35V
C315	24214221	CD, 220pF, ±10%, 500V
C316	24795332	EL, 3300μF, 25V
C317	24617912	EL, 2.2μF, ±10%, 50V
C318	24214332	CD, 3300pF, ±10%, 500V
C320	24693104	PF, 0.1μF, 100V
C321	24214391	CD, 390pF, ±10%, 500V
C322	24530153	PF, 0.015μF, ±10%, 63V
C330	24794471	EL, 470μF, 16V
C360	24530224	PF, 0.22μF, ±10%, 63V
C402	24353271	CD, 270pF
C403	24636339	EL, 3.3μF, 50V
C405	24593203	PF, 0.02μF
C406	24593203	PF, 0.02μF
C407	24593243	PF, 0.024μF
C408	24636100	EL, 10μF, 50V
C409	24232103	CD, 0.01μF, +80%, −20%
C410	24693272	PF, 2700pF, 100V
C412	24550182	PF, 1800pF, 63V
C413	24550182	PF, 1800pF, 63V
C416	24214271	CD, 270pF, ±10%, 500V
C423	24232103	CD, 0.01μF, +80%, −20%
C424	24795470	EL, 47μF, 25V
C425	24794101	EL, 100μF, 16V
⚠ C440	24095892	PF, 6800pF, ±3%, 1600V
C441	24214221	CD, 220pF, ±10%, 500V
C442	24095949	PF, 0.33μF, 200V
C443	24214221	CD, 220pF, ±10%, 500V
C445	24095903	PF, 0.056μF, ±10%, 250V
C447	24644479	EL, 4.7μF, 250V
C448	24795222	EL, 2200μF, 25V
C449	24794471	EL, 470μF, 16V
C451	24640908	EL, 33μF, ±20%, 160V
⚠ C463	24212222	CD, 2200pF, ±10%

Location No.	Part No.	Description
C500	24232103	CD, 0.01μF, +80%, −20%
C501	24797220	EL, 22μF, 50V
C502	24636100	EL, 10μF, 50V
C503	24436101	CD, 100pF
C504	24436101	CD, 100pF
C505	24593273	PF, 0.027μF
C506	24593273	PF, 0.027μF
C507	24593103	PF, 0.01μF
C508	24085028	EL, 2.2μF, 25V, Non-Polar
C509	24353330	CD, 33pF
C510	24232103	CD, 0.01μF, +80%, −20%
C511	24232103	CD, 0.01μF, +80%, −20%
C512	24353200	CD, 20pF
C515	24797220	EL, 22μF, 50V
C516	24550104	PF, 0.1μF, 63V
C517	24550104	PF, 0.1μF, 63V
C518	24232103	CD, 0.01μF, +80%, −20%
C519	24232103	CD, 0.01μF, +80%, −20%
C520	24636478	EL, 0.47μF, 50V
C521	24550474	PF, 0.47μF, 63V
C522	24550474	PF, 0.47μF, 63V
C523	24550474	PF, 0.47μF, 63V
C524	24232103	CD, 0.01μF, +80%, −20%
C525	24436820	CD, 82pF
C526	24436820	CD, 82pF
C527	24436820	CD, 82pF
C530	24796220	EL, 22μF, 35V
C532	24436100	CD, 10pF, ±0.25pF
C533	24436360	CD, 36pF
C534	24436100	CD, 10pF, ±0.25pF
C535	24636100	EL, 10μF, 50V
C536	24636478	EL, 0.47μF, 50V
C537	24794101	EL, 100μF, 16V
C539	24232103	CD, 0.01μF, +80%, −20%
C540	24633100	EL, 10μF, 16V
C541	24232103	CD, 0.01μF, +80%, −20%
C542	24232103	CD, 0.01μF, +80%, −20%
C609	24232103	CD, 0.01μF, +80%, −20%
C620	24550103	PF, 0.01μF, 63V
C621	24636478	EL, 0.47μF, 50V
C622	24634220	EL, 22μF, 25V
C623	24795471	EL, 470μF, 25V
C624	24550104	PF, 0.1μF, 63V
C625	24795471	EL, 470μF, 25V
C626	24633470	EL, 47μF, 16V
C663	24436470	CD, 47pF
C664	24436470	CD, 47pF
⚠ C801	24098999	PF, 0.1μF, ±20%, AC250V
C803	24094906	CD, 4700pF, +80%, −20%, AC250V
C804	24094906	CD, 4700pF, +80%, −20%, AC250V
C805	24094906	CD, 4700pF, +80%, −20%, AC250V
C806	24094906	CD, 4700pF, +80%, −20%, AC250V
C810	24086871	EL, 120μF, ±20%, 400V
C811	24092030	CD, 680pF, ±10%, 2kV
C812	24641220	EL, 22μF, 100V
C813	24092030	CD, 680pF, ±10%, 2kV
C816	24820103	PF, 0.01μF, 630V
C817	24442561	CD, 560pF, ±10%, 2kV
C821	24095877	PF, 1000pF
C822	24436470	CD, 47pF

Location No.	Part No.	Description
C823	24633101	EL, 100μF, 16V
C824	24538223	PF, 0.022μF
C826	24212222	CD, 2200pF, ±10%
C830	24442181	CD, 180pF, ±10%, 2kV
C831	24086953	EL, 220μF, ±20%, 160V
C832	24795102	EL, 1000μF, 25V
C835	24232103	CD, 0.01μF, +80%, −20%
C836	24550104	PF, 0.1μF, 63V
C837	24633220	EL, 22μF, 16V
C838	24212102	CD, 1000pF, ±10%
C839	24636100	EL, 10μF, 50V
C883	24094656	CD, 2200pF, ±20%, AC400V
C884	24094656	CD, 2200pF, ±20%, AC400V
C886	24094656	CD, 2200pF, ±20%, AC400V
C901	24644479	EL, 4.7μF, 250V
C902	24095923	PF, 4700pF, 1600V
CA02	24232103	CD, 0.01μF, +80%, −20%
CA03	24633100	EL, 10μF, 16V
CA05	24232103	CD, 0.01μF, +80%, −20%
CA06	24436300	CD, 30pF
CA07	24436300	CD, 30pF
CA09	24636100	EL, 10μF, 50V
CA13	24636479	EL, 4.7μF, 50V
CA14	24795470	EL, 47μF, 25V
CA15	24212472	CD, 4700pF, ±10%
CA16	24212102	CD, 1000pF, ±10%
CA17	24212561	CD, 560pF, ±10%
CA18	24212472	CD, 4700pF, ±10%
CA19	24212102	CD, 1000pF, ±10%
CA20	24436391	CD, 390pF
CA21	24436221	CD, 220pF
CA22	24550104	PF, 0.1μF, 63V
CA23	24550104	PF, 0.1μF, 63V
CA24	24550104	PF, 0.1μF, 63V
CA25	24636229	EL, 2.2μF, 50V
CA26	24232103	CD, 0.01μF, +80%, −20%
CA27	24550104	PF, 0.1μF, 63V
CA28	24232103	CD, 0.01μF, +80%, −20%
CA29	24636100	EL, 10μF, 50V
CA30	24636010	EL, 1μF, 50V
CA32	24550104	PF, 0.1μF, 63V
CA40	24794102	EL, 1000μF, 16V
CA41	24232103	CD, 0.01μF, +80%, −20%
CA42	24232103	CD, 0.01μF, +80%, −20%
CA43	24232103	CD, 0.01μF, +80%, −20%
CA45	24636478	EL, 0.47μF, 50V
CA48	24232103	CD, 0.01μF, +80%, −20%
CA49	24232103	CD, 0.01μF, +80%, −20%
CB01	24436101	CD, 100pF
CD11	24232103	CD, 0.01μF, +80%, −20%
CD12	24232103	CD, 0.01μF, +80%, −20%
CD13	24797220	EL, 22μF, 50V
CD14	24353150	CD, 15pF
CD15	24355680	CD, 68pF
CD16	24340220	CD, 22pF
CD17	24550562	PF, 5600pF, 63V
CH01	24636010	EL, 1μF, 50V
CH02	24636010	EL, 1μF, 50V
CH03	24636010	EL, 1μF, 50V
CH05	24636100	EL, 10μF, 50V
CH06	24232103	CD, 0.01μF, +80%, −20%
CH10	24636010	EL, 1μF, 50V
CH11	24636010	EL, 1μF, 50V
CH12	24636010	EL, 1μF, 50V

Location No.	Part No.	Description
CH17	24636010	EL, 1μF, 50V
CH20	24232103	CD, 0.01μF, +80%, −20%
CH21	24212102	CD, 1000pF, ±10%
CM05	24232103	CD, 0.01μF, +80%, −20%
CM07	24550273	PF, 0.027μF, 63V
CM08	24232103	CD, 0.01μF, +80%, −20%
CN02	24436150	CD, 15pF
CN05	24232103	CD, 0.01μF, +80%, −20%
CN07	24436360	CD, 36pF
CN10	24436101	CD, 100pF
CN19	24353200	CD, 20pF
CV02	24636229	EL, 2.2μF, 50V
CV03	24633471	EL, 470μF, 16V
CV04	24636229	EL, 2.2μF, 50V
CV05	24550474	PF, 0.47μF, 63V
CV11	24636010	EL, 1μF, 50V
CV12	24232103	CD, 0.01μF, +80%, −20%
CV13	24232103	CD, 0.01μF, +80%, −20%
CV14	24232103	CD, 0.01μF, +80%, −20%
CV15	24633100	EL, 10μF, 16V
CV16	24232103	CD, 0.01μF, +80%, −20%
CV17	24794102	EL, 1000μF, 16V
CV18	24550224	PF, 0.22μF, 63V
CV19	24636010	EL, 1μF, 50V
CV20	24530334	EL, 330k ohm, ±10%, 63V
CV21	24636100	EL, 10μF, 50V
CV23	24232103	CD, 0.01μF, +80%, −20%
CX02	24550474	PF, 0.47μF, 63V
CX03	24550474	PF, 0.47μF, 63V
CX04	24550474	PF, 0.47μF, 63V

RESISTORS

R101	24366122	CF, 1200 ohm
R102	24366124	CF, 120k ohm
R103	24366222	CF, 2200 ohm
R104	24366332	CF, 3300 ohm
R105	24366153	CF, 15k ohm
R106	24366104	CF, 100k ohm
R107	24366562	CF, 5600 ohm
R108	24366102	CF, 1k ohm
R110	24366562	CF, 5600 ohm
R111	24366821	CF, 820 ohm
R112	24366332	CF, 3300 ohm
R113	24366112	CF, 1100 ohm
R114	24366222	CF, 2200 ohm
R115	24366101	CF, 100 ohm
R116	24366471	CF, 470 ohm
R117	24366112	CF, 1100 ohm
R118	24366470	CF, 47 ohm
R119	24366472	CF, 4700 ohm
R120	24366154	CF, 150k ohm
R121	24366331	CF, 330 ohm
R122	24366820	CF, 82 ohm
R123	24366331	CF, 330 ohm
R124	24366331	CF, 330 ohm
R126	24366101	CF, 100 ohm
⚠ R127	24552101	OMF, 100 ohm, 1/2W
R128	24366334	CF, 330k ohm
R129	24366101	CF, 100 ohm
R130	24366513	CF, 51k ohm
R131	24366753	CF, 75k ohm
R132	24366684	CF, 680k ohm
R133	24366272	CF, 2700 ohm
R134	24366223	CF, 22k ohm

Location No.	Part No.	Description
R151	24066953	Variable Resistor, 5k ohm, 1/10W
R153	24066946	Variable Resistor, 1M ohm, 1/10W
R161	24366122	CF, 1200 ohm
R162	24366151	CF, 150 ohm
R163	24366472	CF, 4700 ohm
R164	24366121	CF, 120 ohm
R165	24366562	CF, 5600 ohm
R166	24366560	CF, 56 ohm
⚠ R167	24552101	OMF, 100 ohm, 1/2W
R169	24366152	CF, 1500 ohm
R170	24366151	CF, 150 ohm
R171	24366131	CF, 130 ohm
R200	24366101	CF, 100 ohm
R201	24366391	CF, 390 ohm
R202	24366681	CF, 680 ohm
R203	24366182	CF, 1800 ohm
R204	24366152	CF, 1500 ohm
R205	24366152	CF, 1500 ohm
R206	24366103	CF, 10k ohm
R207	24366103	CF, 10k ohm
R208	24366101	CF, 100 ohm
R209	24366103	CF, 10k ohm
R210	24366203	CF, 20k ohm
R211	24366622	CF, 6200 ohm
R212	24366103	CF, 10k ohm
R213	24366101	CF, 100 ohm
R214	24366182	CF, 1800 ohm
R215	24366152	CF, 1500 ohm
R216	24366133	CF, 13k ohm
R217	24366101	CF, 100 ohm
R218	24366222	CF, 2200 ohm
R219	24366472	CF, 4700 ohm
R225	24366132	CF, 1300 ohm
R242	24366183	CF, 18k ohm
R243	24366223	CF, 22k ohm
R252	24061591	VR, 2k ohm, 1/8W
R253	24061591	VR, 2k ohm, 1/8W
R255	24066952	VR, 10k ohm, 1/10W
R301	24366301	CF, 300 ohm
R302	24366244	CF, 240k ohm
R303	24366363	CF, 36k ohm
R304	24366102	CF, 1k ohm
R305	24366161	CF, 160 ohm
R306	24366471	CF, 470 ohm
R310	24366474	CF, 470k ohm
⚠ R311	24552242	OMF, 2400 ohm, 1/2W
R315	24366243	CF, 24k ohm
R316	24366183	CF, 18k ohm
⚠ R317	24383391	OMF, 390 ohm, 2W
R318	24366824	CF, 820k ohm
⚠ R323	24322129	OMF, 1.2 ohm, 1W
⚠ R324	24552122	OMF, 1200 ohm, 1/2W
⚠ R327	24546689	FR, 6.8 ohm, 1/2W
R333	24366102	CF, 1k ohm
R351	24066950	VR, 50k ohm, 1W
R360	24366184	CF, 180k ohm
R362	24366153	CF, 15k ohm
R386	24366561	CF, 560 ohm
R402	24366273	CF, 27k ohm
R403	24366302	CF, 3k ohm
⚠ R404	24552432	OMF, 4300 ohm, 1/2W
R405	24366511	CF, 510 ohm

Location No.	Part No.	Description
R407	24366161	CF, 160 ohm
R408	24366682	CF, 6800 ohm
⚠ R410	24552472	OMF, 4700 ohm, 1/2W
R411	24366391	CF, 390 ohm
R412	24366121	CF, 120 ohm
⚠ R416	24007568	Cement, 1800 ohm, 5W
R417	24366510	CF, 51 ohm
⚠ R420	24009951	OMF, 1k ohm, 1W
⚠ R423	24552221	OMF, 220 ohm, 1/2W
⚠ R440	24552103	OMF, 10k ohm, 1/2W
⚠ R441	24552103	OMF, 10k ohm, 1/2W
⚠ R442	24553102	OMF, 1k ohm, 1W
⚠ R444	24007878	Cement, 4.7 ohm, 10W
⚠ R445	24552330	OMF, 33 ohm, 1/2W
⚠ R448	24984229	MF, 2.2 ohm, 2W
R451	24066951	VR, 20k ohm, 1/10W
R452	24069547	VR, 5k ohm, 0.08W
R501	24366821	CF, 820 ohm
R502	24366334	CF, 330k ohm
R503	24366202	CF, 2k ohm
R504	24366391	CF, 390 ohm
R505	24366822	CF, 8200 ohm
R507	24366822	CF, 8200 ohm
R508	24366821	CF, 820 ohm
R509	24366203	CF, 20k ohm
R510	24366101	CF, 100 ohm
R511	24366562	CF, 5600 ohm
R512	24366152	CF, 1500 ohm
R513	24366152	CF, 1500 ohm
R515	24366221	CF, 220 ohm
R516	24366221	CF, 220 ohm
R517	24366221	CF, 220 ohm
R520	24366562	CF, 5600 ohm
R521	24366102	CF, 1k ohm
R522	24360185	CF, 1.8M ohm, 1/8W
R524	24366103	CF, 10k ohm
R525	24366103	CF, 10k ohm
R526	24366122	CF, 1200 ohm
R527	24366122	CF, 1200 ohm
R531	24366102	CF, 1k ohm
R532	24366272	CF, 2700 ohm
R533	24366132	CF, 1300 ohm
R534	24376823	CF, 82k ohm, 1/2W
R535	24366272	CF, 2700 ohm
R536	24376823	CF, 82k ohm, 1/2W
R537	24366132	CF, 1300 ohm
R538	24366302	CF, 3k ohm
R539	24366132	CF, 1300 ohm
R540	24376823	CF, 82k ohm, 1/2W
R541	24366821	CF, 820 ohm
R542	24366271	CF, 270 ohm
R543	24366512	CF, 5100 ohm
R544	24366101	CF, 100 ohm
R545	24366101	CF, 100 ohm
R547	24366471	CF, 470 ohm
R548	24366471	CF, 470 ohm
R549	24366471	CF, 470 ohm
R551	24066955	VR, 1k ohm, 1/10W
R557	24061591	VR, 2k ohm, 1/8W
R558	24061591	VR, 2k ohm, 1/8W
R559	24061591	VR, 2k ohm, 1/8W
R564	24366101	CF, 100 ohm
R565	24366101	CF, 100 ohm
R567	24366101	CF, 100 ohm

Location No.	Part No.	Description
R570	24366562	CF, 5600 ohm
R571	24366562	CF, 5600 ohm
R572	24366562	CF, 5600 ohm
R573	24366104	CF, 100k ohm
⚠ R591	24009957	OMF, 10k ohm, 2W
⚠ R592	24009957	OMF, 10k ohm, 2W
⚠ R593	24009957	OMF, 10k ohm, 2W
R621	24366681	CF, 680 ohm
R622	24366339	CF, 3.3 ohm
R643	24366103	CF, 10k ohm
R644	24366104	CF, 100k ohm
R661	24942331	CC, 330 ohm, 1/2W
R664	24366102	CF, 1k ohm
⚠ R801	24007932	Cement, 6.2 ohm, 10W
R803	24366102	CF, 1k ohm
R804	24366270	CF, 27 ohm
R805	24366621	CF, 620 ohm
⚠ R810	24321518	OMF, 0.51 ohm, 1/2W
R811	24377224	CF, 220k ohm, 1W
⚠ R813	24383330	OMF, 33 ohm, 2W
⚠ R815	24321479	OMF, 4.7 ohm, 1/2W
⚠ R816	24384683	OMF, 68k ohm, 3W
⚠ R817	24321518	OMF, 0.51 ohm, 1/2W
R818	24366561	CF, 560 ohm
R819	24366823	CF, 82k ohm
R821	24366472	CF, 4700 ohm
⚠ R822	24327823	MF, 82k ohm, ±1%, 1/4W
R823	24366472	CF, 4700 ohm
R824	24366102	CF, 1k ohm
R825	24366102	CF, 1k ohm
R826	24366103	CF, 10k ohm
⚠ R827	24382100	OMF, 10 ohm, 1W
⚠ R829	24383560	OMF, 56 ohm, 2W
⚠ R830	24321568	OMF, 0.56 ohm, 1/2W
⚠ R833	24384752	OMF, 7500 ohm, 3W
R834	24366682	CF, 6800 ohm
R835	24366102	CF, 1k ohm
R836	24376683	CF, 68k ohm, 1/2W
R837	24890103	CF, 10k ohm, 1/4W
R838	24366272	CF, 2700 ohm
R839	24366182	CF, 1800 ohm
⚠ R840	24007642	Cement, 5600 ohm, 5W
⚠ R841	24384822	OMF, 8200 ohm, 3W
R845	24366102	CF, 1k ohm
⚠ R890	24000816	PTC Thermistor, Dual
R901	24946272	CC, 2700 ohm, ±10%, 1/2W
R902	24946272	CC, 2700 ohm, ±10%, 1/2W
R903	24946272	CC, 2700 ohm, ±10%, 1/2W
⚠ R920	24000906	FR, 2.4 ohm, 2W
RA04	24366102	CF, 1k ohm
RA05	24366272	CF, 2700 ohm
RA07	24366472	CF, 4700 ohm
RA08	24366102	CF, 1k ohm
RA10	24366472	CF, 4700 ohm
RA11	24366102	CF, 1k ohm
RA12	24366102	CF, 1k ohm
RA13	24366103	CF, 10k ohm
RA14	24366622	CF, 6200 ohm
RA15	24366102	CF, 1k ohm
RA16	24366103	CF, 10k ohm
RA17	24366102	CF, 1k ohm
RA18	24366101	CF, 100 ohm
RA19	24366472	CF, 4700 ohm
RA20	24366102	CF, 1k ohm

Location No.	Part No.	Description
RA21	24366223	CF, 22k ohm
RA22	24366333	CF, 33k ohm
RA23	24366333	CF, 33k ohm
RA24	24366333	CF, 33k ohm
RA25	24360225	CF, 2.2M ohm, 1/8W
RA27	24366333	CF, 33k ohm
RA28	24366221	CF, 220 ohm
RA29	24366103	CF, 10k ohm
RA30	24366102	CF, 1k ohm
RA31	24366472	CF, 4700 ohm
RA32	24366102	CF, 1k ohm
RA33	24366102	CF, 1k ohm
RA34	24366103	CF, 10k ohm
RA35	24366152	CF, 1500 ohm
RA36	24366473	CF, 47k ohm
RA37	24366103	CF, 10k ohm
RA38	24366392	CF, 3900 ohm
RA39	24366123	CF, 12k ohm
RA40	24366563	CF, 56k ohm
RA41	24366564	CF, 560k ohm
RA42	24366561	CF, 560 ohm
RA45	24366102	CF, 1k ohm
RA46	24366163	CF, 16k ohm
RA48	24366153	CF, 15k ohm
RA49	24366123	CF, 12k ohm
RA60	24366102	CF, 1k ohm
RA66	24366102	CF, 1k ohm
RA67	24366103	CF, 10k ohm
RA68	24366152	CF, 1500 ohm
RA70	24941565	CC, 5.6M ohm, 1/4W
RA71	24941565	CC, 5.6M ohm, 1/4W
RA72	24941565	CC, 5.6M ohm, 1/4W
RA73	24941565	CC, 5.6M ohm, 1/4W
RA76	24366471	CF, 470 ohm
RA77	24366471	CF, 470 ohm
RA80	24366221	CF, 220 ohm
RA81	24366103	CF, 10k ohm
RA82	24366103	CF, 10k ohm
RA85	24366102	CF, 1k ohm
RA86	24366392	CF, 3900 ohm
RA87	24366332	CF, 3300 ohm
RA88	24366222	CF, 2200 ohm
RA89	24366103	CF, 10k ohm
RA90	24366103	CF, 10k ohm
RB01	24366472	CF, 4700 ohm
RB02	24366332	CF, 3300 ohm
RB03	24366103	CF, 10k ohm
RB04	24366103	CF, 10k ohm
RB05	24366392	CF, 3900 ohm
RB06	24366473	CF, 47k ohm
RD11	24366102	CF, 1k ohm
RD13	24366183	CF, 18k ohm
RD14	24366512	CF, 5100 ohm
RD15	24366222	CF, 2200 ohm
RD27	24366101	CF, 100 ohm
RD28	24366102	CF, 1k ohm
RH01	24366101	CF, 100 ohm
RH02	24366101	CF, 100 ohm
RH03	24366101	CF, 100 ohm
RH04	24366510	CF, 51 ohm
RH05	24366510	CF, 51 ohm
RH06	24366510	CF, 51 ohm
RH07	24366220	CF, 22 ohm
RH08	24366220	CF, 22 ohm

Location No.	Part No.	Description
RH09	24366220	CF, 22 ohm
RH10	24366103	CF, 10k ohm
RH11	24366102	CF, 1k ohm
RH14	24366102	CF, 1k ohm
RH15	24366103	CF, 10k ohm
RH19	24366562	CF, 5600 ohm
RH20	24366562	CF, 5600 ohm
RH25	24366472	CF, 4700 ohm
RH27	24366102	CF, 1k ohm
RH28	24366102	CF, 1k ohm
RH29	24366152	CF, 1500 ohm
RH30	24366103	CF, 10k ohm
RH31	24366682	CF, 6800 ohm
RH32	24366102	CF, 1k ohm
RH40	24366242	CF, 2400 ohm
RH41	24366391	CF, 390 ohm
RH42	24366242	CF, 2400 ohm
RH43	24366471	CF, 470 ohm
RH44	24366242	CF, 2400 ohm
RH45	24366681	CF, 680 ohm
RH48	24366123	CF, 12k ohm
RH49	24366750	CF, 75 ohm
RM07	24941103	CC, 10k ohm, 1/4W
RN02	24366102	CF, 1k ohm
RN05	24366392	CF, 3900 ohm
RN08	24360103	CF, 10k ohm, 1/8W
RR07	24366391	CF, 390 ohm
RV01	24366102	CF, 1k ohm
RV02	24366181	CF, 180 ohm
RV03	24366103	CF, 10k ohm
RV04	24366103	CF, 10k ohm
RV05	24366103	CF, 10k ohm
RV06	24366101	CF, 100 ohm
RV07	24366103	CF, 10k ohm
⚠ RV08	24552331	OMF, 330 ohm, 1/2W
RV09	24366103	CF, 10k ohm
RV10	24366223	CF, 22k ohm
RV11	24366682	CF, 6800 ohm
RV12	24366910	CF, 91 ohm
RV13	24366102	CF, 1k ohm
RV14	24366102	CF, 1k ohm
⚠ RV15	24552181	OMF, 180 ohm, 1/2W
RV16	24366101	CF, 100 ohm
RV17	24366103	CF, 10k ohm
RV18	24366273	CF, 27k ohm
RV19	24366103	CF, 10k ohm
⚠ RV20	24552181	OMF, 180 ohm, 1/2W
RV21	24366271	CF, 270 ohm
RV22	24366822	CF, 8200 ohm
RV24	24366473	CF, 47k ohm
RV25	24366331	CF, 330 ohm
RV28	24366104	CF, 100k ohm
RV32	24366223	CF, 22k ohm
RV33	24366102	CF, 1k ohm
RV40	24366151	CF, 150 ohm
RV41	24366103	CF, 10k ohm
RV42	24366821	CF, 820 ohm
RV43	24366122	CF, 1200 ohm
RV44	24366820	CF, 82 ohm
⚠ RV45	24552391	OMF, 390 ohm, 1/2W
RV46	24366101	CF, 100 ohm
RV47	24366272	CF, 2700 ohm
RV48	24366101	CF, 100 ohm
RX02	24366102	CF, 1k ohm

Location No.	Part No.	Description
RX05	24366101	CF, 100 ohm
RX08	24366101	CF, 100 ohm
RX10	24366101	CF, 100 ohm
RX13	24366223	CF, 22k ohm
COILS & TRANSFORMERS		
L001	23237986	Coil, Peaking, TRF4120AC
L101	23237987	Coil, Peaking, TRF4100AC
L102	23262650	Coil, IF, TRF1149D
L103	23237985	Coil, Peaking, TRF4150AC
L104	23237988	Coil, Peaking, TRF4829AC
L105	23237993	Coil, Peaking, TRF4339AC
L106	23237993	Coil, Peaking, TRF4339AC
L107	23237987	Coil, Peaking, TRF4100AC
L151	23262668	Coil,IF, TRF1162T
L153	23262813	Coil, IF, TRF1077D
L161	23201004	Coil, Choke, TRF9202B
L162	23232880	Coil, Variable, TRF3505D
L163	23262843	Coil, PIF Trap, TRF1457D
L201	23237974	Coil, Peaking, TRF4121AC
L311	23261974	Coil, Choke, HC5-035
L404	23238934	Coil, Peaking, TRF4109AC
L405	23221739	Coil, Choke, TRF9252D
L406	23103859	Coil (Ferrite Bead), TEM2011
L411	23233065	Coil, Linearity, TLN2111
L412	23221968	Coil, Choke, TLN3010
⚠ L462	23227345	Deflection Yoke, AT6050/00
L503	23237987	Coil, Peaking, TRF4100AC
L551	23250972	Coil, 1H-Delay Matching, TRF5418D
L802	23103940	Coil (Ferrite Bead), TEM2001
L803	23103940	Coil (Ferrite Bead), TEM2001
L830	23221747	Coil, Choke, TRF9253D
L831	23221065	Coil, Choke, TLN1015K
L832	23221060	Coil, Choke, TLN1015E
L901	23200616	Coil, Degaussing, TSB2293
LA01	23238934	Coil, Peaking, TRF4109AC
LA02	23221803	Coil, Choke, TLN3040D
LB01	23262778	Coil, IF, TRF1112
LD05	23232946	Coil, Variable, TRF3073
LN02	23237985	Coil, Peaking, TRF4150AC
LV01	23237988	Coil, Peaking, TRF4829AC
T401	23224983	Transformer, Horiz. Drive, TLN1039
⚠ T461	23236198	Transformer, Flyback, AT2079/17
T801	23211858	Line Filter, TRF3139
⚠ T802	23213618	Transformer, Converter, TPW3096
T803	23211961	Line Filter, TRF3118
SEMICONDUCTORS		
IC101	23318437	IC, μPC1820CA
IC303	23119548	IC, AN5515
IC405	23318218	IC, μPC7812H
IC501	B0379435	IC, TA8653N
IC601	23119668	IC, TDA2611A
IC835	23318299	IC, L78MR05-FA
ICA01	23318440	Transistor, M50436-687SP
ICA02	23119182	Transistor, μPD6336C
ICA03	23318397	IC, M6M80021P
ICA12	23119441	IC, LA7910
ICD03	B0325290	IC, TA7337P
ICH01	23119139	IC, AN5862K

Location No.	Part No.	Description
ICV01	B0379280	IC, TA8628N
Q102	23114691	Transistor, BC557A
Q103	23118980	Transistor, BC337
Q104	23114689	Transistor, BC547A
Q161	A6708871	Transistor, 2SC388ATM
Q162	A6708871	Transistor, 2SC388ATM
Q201	23114689	Transistor, BC547A
Q202	23114689	Transistor, BC547A
Q301	23114632	Transistor, BC547B
Q303B	23035308	Screw, BTB3X8SZN
Q360	23114689	Transistor, BC547A
Q402	A6330069	Transistor, 2SC2482 FA-1
⚠ Q404	23314375	Transistor, ON4409
Q406	23314229	Transistor, 2SD1378-Q
Q502	23114691	Transistor, BC557A
Q503	23114691	Transistor, BC557A
Q505	23114693	Transistor, BF871
Q506	23114689	Transistor, BC547A
Q507	23114693	Transistor, BF871
Q508	23114689	Transistor, BC547A
Q509	23114693	Transistor, BF871
Q510	23114689	Transistor, BC547A
Q514	23114688	Transistor, BC327
Q516	23114689	Transistor, BC547A
Q609	23114691	Transistor, BC557A
⚠ Q801	23314146	Transistor (STR), STR58041
Q802	23114632	Transistor, BC547B
Q803	A6534145	Transistor, 2SA1020-Y
Q804	23114632	Transistor, BC547B
Q805	23114546	Transistor, BC557B
Q806	23114632	Transistor, BC547B
Q807	23114632	Transistor, BC547B
Q830	A6358055	Transistor, 2SC3182N FA-1
Q831	A6547303	Transistor, 2SA1321
Q832	A6324961	Transistor, 2SC2229-Y
QA05	23114689	Transistor, BC547A
QA06	23114691	Transistor, BC557A
QA07	23114689	Transistor, BC547A
QA08	23114691	Transistor, BC557A
QA09	23114689	Transistor, BC547A
QA11	23114689	Transistor, BC547A
QA13	23114689	Transistor, BC547A
QA14	23114691	Transistor, BC557A
QA16	23114689	Transistor, BC547A
QA17	23114689	Transistor, BC547A
QB01	23114689	Transistor, BC547A
QB02	23114689	Transistor, BC547A
QG16	23114689	Transistor, BC547A
QH02	23114689	Transistor, BC547A
QH03	A6734590	Transistor, 2SC752GTM-Y
QH05	23114689	Transistor, BC547A
QV02	23114691	Transistor, BC557A
QV03	23114689	Transistor, BC547A
QV04	23114689	Transistor, BC547A
QV05	A6342200	Transistor, 2SC2878-A
QV08	A6342200	Transistor, 2SC2878-A
QV11	23114691	Transistor, BC557A
QV12	23114691	Transistor, BC557A
D241	A7150041	Diode, 1SS104
D302	23118479	Diode, BYD33J
D305	23118479	Diode, BYD33J
D314	A7117205	Diode, Zener, 04AZ12X
D315	A7116725	Diode, Zener, 04AZ7.5Z
D320	23115599	Diode, 1N4148

Location No.	Part No.	Description
D321	23115599	Diode, 1N4148
D401	A7116925	Diode, Zener, 04AZ9.1Z
D402	A7117715	Diode, Zener, 04AZ20Y
D403	23115603	Diode, Zener, ZPD12
D406	23118479	Diode, BYD33J
D408	23118451	Diode, RU4A
D409	A7117015	Diode, Zener, 04AZ10Y
D410	A7116815	Diode, Zener, 04AZ8.2Y
D593	23115599	Diode, 1N4148
D594	23115599	Diode, 1N4148
D595	23115599	Diode, 1N4148
D603	23115599	Diode, 1N4148
D604	23115599	Diode, 1N4148
D605	23115599	Diode, 1N4148
D801	23118124	Diode, LB-156 (LF-B)
D806	23115599	Diode, 1N4148
D807	23115599	Diode, 1N4148
D808	23115599	Diode, 1N4148
D811	23115599	Diode, 1N4148
D812	23118736	Diode, BYV96E
D813	23118479	Diode, BYD33J
D814	A7116615	Diode, Zener, 04AZ6.8Y
D815	23118447	Photo Coupler, CNY75C
D816	23118479	Diode, BYD33J
D818	A7117615	Diode, Zener, 04AZ18Y
D819	A7117615	Diode, Zener, 04AZ18Y
D821	23118479	Diode, BYD33J
D830	23118994	Diode, BYW95C
D831	23118479	Diode, BYD33J
D835	A7275400	Diode, 1S2462
D836	A7275400	Diode, 1S2462
DA02	23115599	Diode, 1N4148
DA03	23115599	Diode, 1N4148
DA04	23115599	Diode, 1N4148
DA05	23115599	Diode, 1N4148
DA06	23115599	Diode, 1N4148
DA07	23115599	Diode, 1N4148
DA08	23115599	Diode, 1N4148
DA10	23115599	Diode, 1N4148
DA11	23115599	Diode, 1N4148
DA21	23115599	Diode, 1N4148
DA22	23115599	Diode, 1N4148
DA23	23115599	Diode, 1N4148
DA26	23115599	Diode, 1N4148
DA27	23115599	Diode, 1N4148
DA28	23115599	Diode, 1N4148
DA29	23115599	Diode, 1N4148
DA30	23115878	Diode, Zener, μPC574J(L)
DA31	23115599	Diode, 1N4148
DA32	23115599	Diode, 1N4148
DE40	23118969	Diode (LED), MV57124, Red
DH01	23115599	Diode, 1N4148
DH02	23115599	Diode, 1N4148
DH03	23115599	Diode, 1N4148
DH04	23115599	Diode, 1N4148
DH05	23115599	Diode, 1N4148
DH06	23115599	Diode, 1N4148
DH07	23115599	Diode, 1N4148
DH08	23115599	Diode, 1N4148
DH10	A7116215	Diode, Zener, 04AZ4.7Y
DH11	23115599	Diode, 1N4148

Location No.	Part No.	Description
MISCELLANEOUS		
B206	23864234	Holder (Terminal)
⚠ F801	23144896	Fuse, T2.0A
F801A	23165102	Fuse Holder
K901	23120610	Remote Sensor, IR-9101-K
P661	23365339	Earphone Jack, 6mm
⚠ P801	23176705	Power Cord
PH01	23365025	Socket, 21PIN
S202	23145542	Switch, Lever, 1C3P
S301	23145682	Switch, Lever, 1C3P
⚠ S801	23344092	Power Switch, 1C1P
SA01	23344093	Switch, Push, 1C1P
⚠ V901A	23902022	Socket, CRT, 8P
W201	23250877	Coil, Delay Line, TRF2082
W661	23151231	Speaker, SPK1234, 40x70mm, 8 ohm
X401	23153886	Ceramic Resonator, TCR1012
X501	23153979	Crystal, 4.43MHz
X502	23250950	Coil, 1H-Delay Line, DL711
Z101	A5611192	PIF SAW Filter, F1037C
Z102	23153725	Ceramic Resonator, TCR1043
Z103	23207925	Ceramic Video Trap, 6.5MHz, TCF1013
Z104	23107658	Ceramic Video Trap, 5.74MHz, TCF1052
Z201	23107927	Ceramic Video Trap, 5.5MHz, TCF1011
Z602	23107947	Ceramic Filter, 5.5MHz, SFE5.5MBF
Z667	23107742	Ceramic Filter, TEM1014
Z668	23107742	Ceramic Filter, TEM1014
ZA01	23153845	Ceramic Resonator, 4MHz, TCR1015
ZA02	24094651	Capacitor Block, 100pFx4, 50V
ZH01	23107744	Filter, 3MHz, TEM1012
ZH02	23107744	Filter, 3MHz, TEM1012
ZV01	23107849	Ceramic Video Trap, 4.43MHz, TCF1032
PC BOARD ASSEMBLIES		
U101A	23336149	IF Board, PW9546-1
U101B	23336150	SIF Board, PW9546-2
U101C	23336151	CRT Drive Board, PW9546-3
U101D	23336152	Switch Board, PW9546-4
U101E	23336153	IR/LED Board, PW9546-5
U902A	23336148	Main Board, PW9545
PICTURE TUBE		
⚠ V901	23312213	Picture Tube, A41EAM01X
TUNER		
H001	23121613	Tuner, VHF/UHF, EG443A
REMOTE HAND SET PARTS		
K902	23120605	Remote Hand Unit, CT9432
AT01	23304085	Upper Case
AT02	23300919	Lower Case
AT03	23300920	Battery Cover
AT04	23330921	Filter
ST01	23300629	Rubber Sheet
UT01	23334590	PC Board, PW6918
ZT01	23153736	Ceramic Resonator, CSB455EB20

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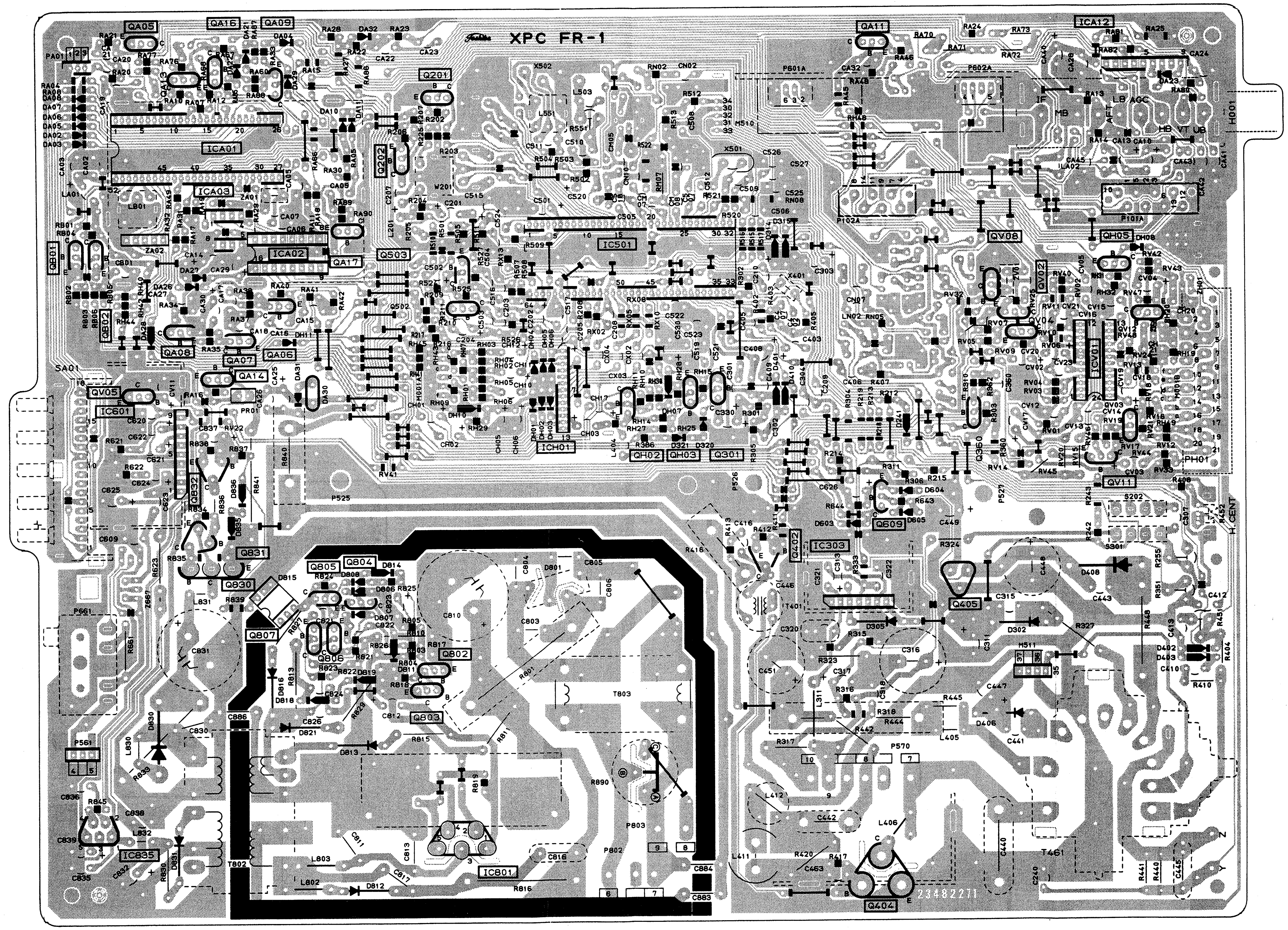
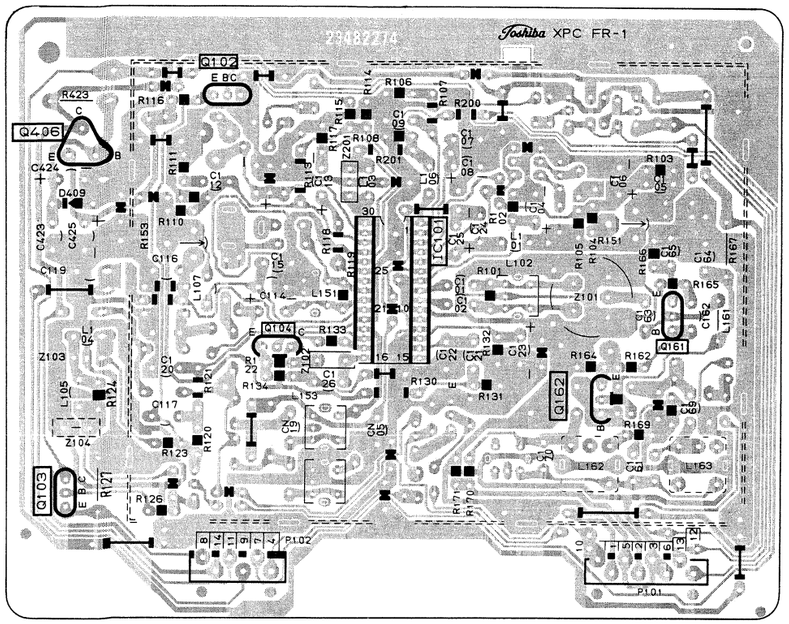
MAIN BOARD PW9545

BOTTOM (FOIL) SIDE



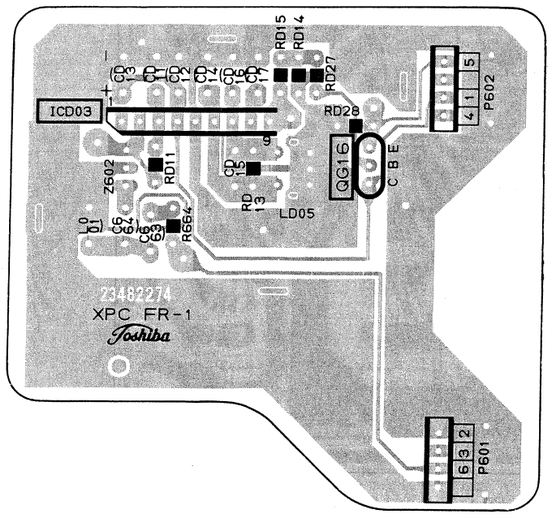
IF BOARD PW9546-1

BOTTOM (FOIL) SIDE



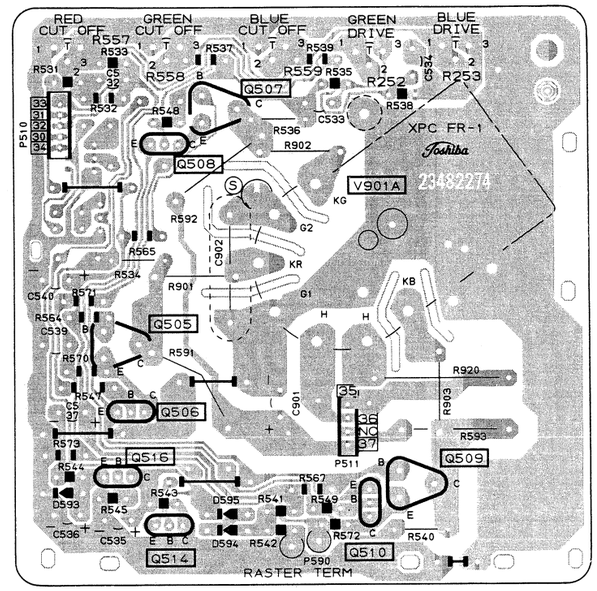
SIF BOARD PW9546-2

BOTTOM (FOIL) SIDE



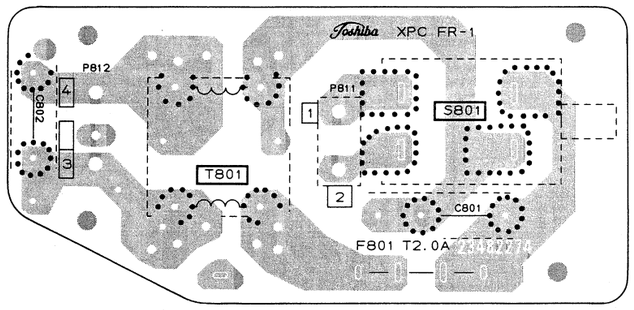
CRT DRIVE BOARD PW9546-3

BOTTOM (FOIL) SIDE



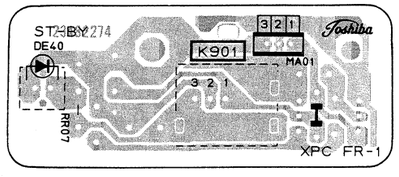
SWITCH BOARD PW9546-4

BOTTOM (FOIL) SIDE



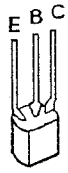
IR/LED BOARD PW9546-5

BOTTOM (FOIL) SIDE

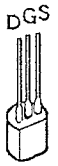


TERMINAL VIEW OF TRANSISTORS

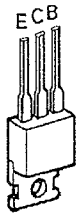
① BC327
BC337
BC547A
BC547B
BC547C
BC557A
BC557B
BC556A



② 2SK30ATM
2SK117



③ BD202



④ BF871
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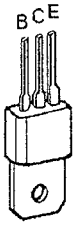
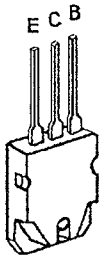
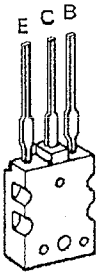
2SC1569



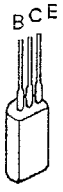
⑤ 2SC3678
2SC3182N



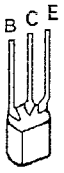
⑥ 2SD1427
2SD1432



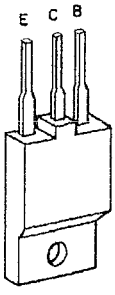
⑦ 2SC2482
2SA1321
2SC2230
2SA1020
2SC2655
2SC752GTM



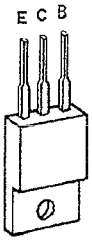
⑧ 2SC388ATM
2SA1015
2SC1959
2SA562TM



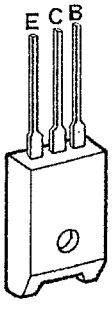
⑨ 2SD1548



⑩ 2SC2023



⑪ ON4409



MEMO

175R9T

SCHEMATIC DIAGRAM

IMPORTANT SAFETY NOTICE

Component marked with the International Hazard Symbol must, if changed, be replaced by an approved type and must be mounted as the original. This will ensure that the safety standards adhered to during manufacture will be maintained following any servicing procedure.

OBSERVATION OF VOLTAGES AND WAVEFORMS

1. Voltage readings were obtained using a high impedance digital voltmeter.
2. (—) or ground lead of instruments should be connected to the ground marked (⊥) in the shematic on checking Non-isolated circuit surrounded by mark but should be connected to the points marked (⏚) on checking isolated circuit.
3. The voltage readings may vary as much as ±20%.
4. Check that the Tuning, A.F.C., Brightness, Contrast and Colour controls are adjusted for the best picture, making sure that the Contrast,Brightness and Colour controls are set near to their mid-positions.
5. The waveforms were taken using a standard colour bar signal and were observed using a wide band oscilloscope via a low capacity probe.

NOTES:

1. This circuit diagram is subject to change without notice.

EXPRESSION

VALUE OF RESISTOR, CAPACITOR and INDUCTOR

1. Resistance is shown in ohm, k=1,000, M=1,000,000.
2. Unless otherwise noted in schematic, all capacitor values less than 1 are expressed in μF and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor values more than 1 are expressed in μH, and the values less than 1 in H.

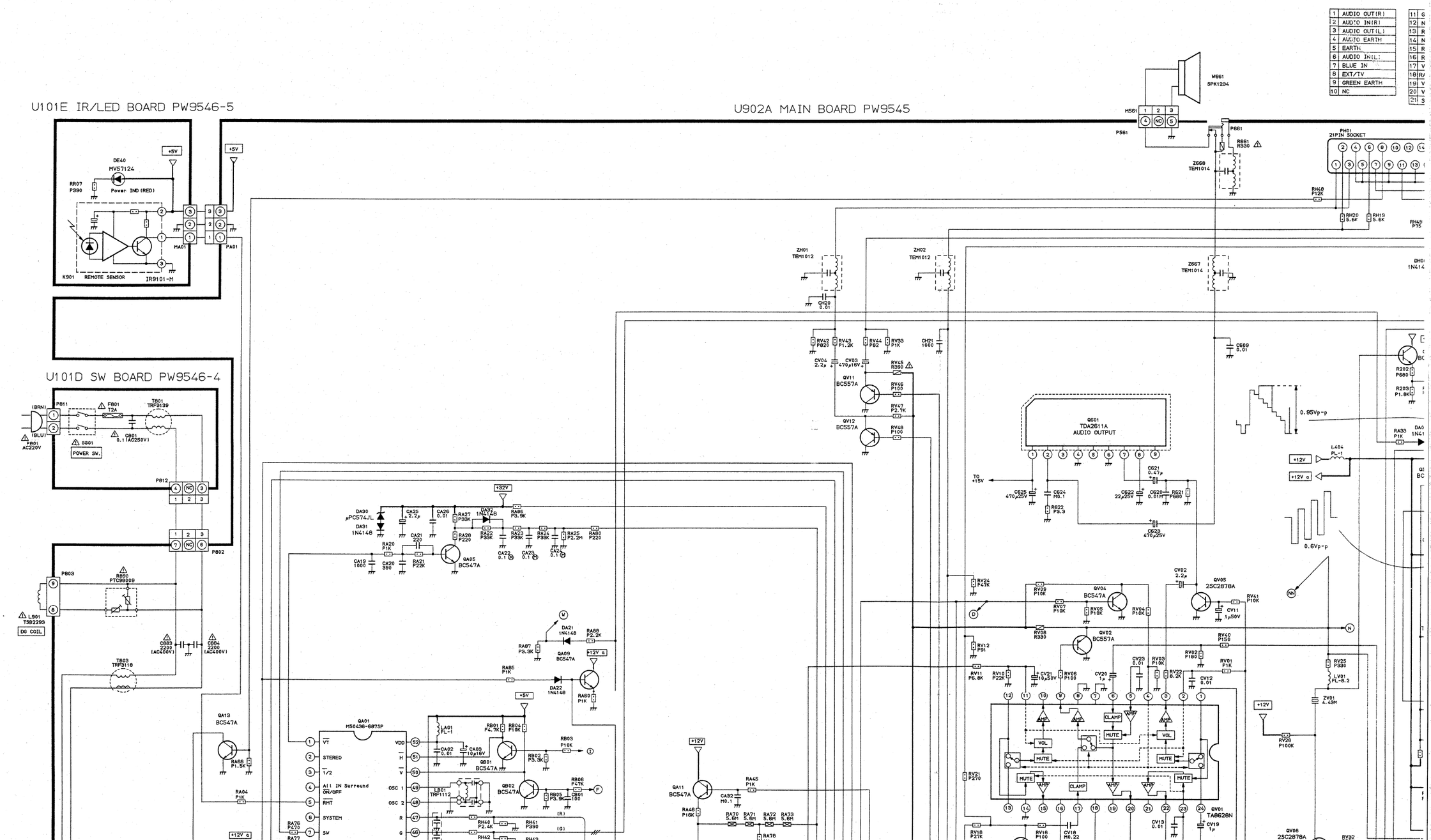
GROUNDING SYMBOL

1. ⊥: Non isolated ground, ⏚ : Isolated ground.

RESISTOR

Prefixed to v

TY
Carbon
Oxide M
Ins. Carl
Wire
Cement co
Fusib



DG COIL

T803 TRF9118

CB03 2200 (AC400V)

CB04 2200 (AC400V)

QA01 M50436-687SP

QA13 BC547A

QA16 BC547A

QA17 BC547A

QA09 BC547A

QA11 BC547A

QA14 BC557A

QA02 μPD6336C

QA03 M6M80021P

QA06 BC557A

QA08 BC557A

QA07 BC547A

QA12 LA7910

QB01 BC547A

QB02 BC547A

QV03 BC547A

QV01 TA8628N

QV08 2SC2878A

DA01 1N4148

DA02 1N4148

DA03 1N4148

DA04 1N4148

DA05 1N4148

DA06 1N4148

DA07 1N4148

DA08 1N4148

DA09 1N4148

DA10 1N4148

DA11 1N4148

DA12 1N4148

DA22 1N4148

DA23 1N4148

DA26 1N4148

DA27 1N4148

DA28 1N4148

DA29 1N4148

SA01

ZA01 TCR1014, TCR1015

ZA02 100X4

LA01 PL-1

LB01 TRF1112

LV01 PL-8.2

ZV01 4.43M

(EXT MUTE)

(MUTE)

AFT

VIDEO OUT

SIF

RF AGC

IF

P102A

P102

P101A

P101

H001 EG443A TUNER

L103 PL-15

L162 TRF3505D 40.4MHz

P1F TRAP

Q801 STR58041

Q802 BC547B

Q803 2SA1020Y

Q804 BC547B

Q805 BC557B

Q806 BC547B

Q807 BC547B

Q830 2SC3182N(FA-1)

Q831 2SA1321

Q832 2SC2229Y

Q835 L78MR05

T802 TPW3096

L801 TRF9253D

L802 TEH2001

L803 TEH2001

L831 TLN1015K

L832 TLN1015E

D801 GF15G

D830 BYW95C

D831 BYD33J

D832 BYD33J

D833 BYD33J

D812 BYY96E

D815 CNY75C

PR01

+12V

+5V

+15V

+32V

+114.5V

RMT

RESET

HLVcc

RESISTORS

Prefixed to values:

TYPE	MARK
Carbon Comp.	S
Oxide Metal Film	R
Ins. Carbon Film	P
Wire Wound	W
Cement covered W.W.	NO MARK
Fusible Res.	FR

Suffixes to values:

TOLERANCE	MARK
±1%	(F)
±2%	(G)

Suffixes to VR values:

LAW	MARK
Linear	(B)
'C' Curve Characteristic	(C)

Rating Markings:

WATTAGE	MARK
1/6W	
1/4W	
1/2W	
1W	1
2W	2

WATTAGE	MARK
3W	3
5W	5
10W	10
15W	15
20W	20
25W	25

CAPACITORS

Rating Markings:

Type	Mark
Ceramic Disc 50V Only	
Electrolytic	
Electrolytic Non-Polar	
Variable Capacitor	
Other	

ire expressed in

ire expressed in

1	AUDIO OUT(R)	11	GREEN IN
2	AUDIO IN(R)	12	NC
3	AUDIO OUT(L)	13	RED EARTH
4	AUDIO EARTH	14	NC
5	EARTH	15	RED IN
6	AUDIO IN(L)	16	RAPID BLANKING
7	BLUE IN	17	VIDEO EARTH
8	EXT/TV	18	RAPID BLK EARTH
9	GREEN EARTH	19	VIDEO OUT
10	NC	20	VIDEO IN
		21	SHIELD EARTH

V661
SPK1234

U101C CRT DRIVE BOARD PW9546-3

U101A IF BOARD PW9546-1

U101B SIF BOARD PW9546-2